QUALITY IMPROVEMENT IN AMERICA

HEARING

BEFORE THE

SUBCOMMITTEE ON
TECHNOLOGY AND COMPETITIVENESS

OF THE

COMMITTEE ON
SCIENCE, SPACE, AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

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QUALITY IMPROVEMENT IN AMERICA

TUESDAY, APRIL 23, 1991

U.S. House of Representatives,
Committee on Science, Space, and Technology,
Subcommittee on Technology and Competitiveness,
Washington, D.C.

The subcommittee met, pursuant to notice, at 1:30 p.m. in room 2318, Rayburn House Office Building, Hon. Tim Valentine [chairman of the subcommittee] presiding.

Mr. Valentine. Ladies and gentleman, we will be joined by the ranking member, Mr. Lewis, and by other members, I think, momentarily.

Today, the subcommittee on technology and competitiveness will review the status of the Malcolm Baldrige National Quality Award. To examine its impact on the productivity and quality awareness of American companies. Customer satisfaction is the key to successfully competing in the global economy, and it starts with quality products. American goods and services must be the best that money can buy.

As part of the quality improvement movement, our subcommittee originated and Congress passed the Malcolm Baldrige National Quality Improvement Act of 1987 which created a national quality award to recognize and publicize quality achievements of United States companies.

To compete for the award, companies must undergo a rigorous examination by an independent board of examiners composed of quality experts. This year for the first time in the award's three-year history, an award has been given to a service company. This is also the first year awards have been given in all three Baldrige categories; that is, manufacturing, services, and small business.

The winners, as certainly everyone here knows, the Cadillac Motor Car Division, Detroit, Michigan and IBM Rochester, Rochester, Minnesota in the manufacturing category; Wallace Company, Incorporated, Houston, Texas in the small business category; and Federal Express from Memphis, Tennessee in the service category.

We are pleased to welcome representatives from all four companies and look forward to their comments on quality improvement strategies. We also welcome the director of the Malcolm Baldrige National Quality Award program, Dr. Curt Reimann, who will provide a status report on the program and address issues related to the prevention of conflicts of interest on the part of Baldrige award examinees and the appropriate use of the award in company advertising.

I am pleased to recognize at this time the—well before that, let me go on and tell you that for the second panel we plan to explore the relationship between the total quality principals and education, particularly how it effects the competency of our future workforce. It is important to make sure that our students get the training necessary to be able to function as competent workers using quality principals. All Japanese students, we are told, from elementary school on would study the statistical basis of quality and quality principals as part of their regular course of study. We are interested in learning what is done to prepare the current workforce, as well as the blue collar, managerial, and professional workers of the future for work environments where total quality principals are a way of life.

We welcome all of you here and the Chair is happy to recognize at this time the distinguished ranking member of the subcommittee, the gentleman from Florida, Mr. Tom Lewis.

[The prepared statement of Mr. Valentine follows:]

OPENING STATEMENT

HONORABLE TIM VALENTINE

HEARING ON QUALITY IMPROVEMENT IN AMERICA

APRIL 23, 1991

Today the Subcommittee on Technology and Competitiveness will review the status of the Malcolm Baldrige National Quality Award to examine its impact on the productivity and quality awareness of American companies.

Customer satisfaction is the key to successfully competing in a global economy, and it starts with quality products. American goods and services must be the "best that money can buy".

As part of the quality improvement movement, our subcommittee originated and Congress passed the Malcolm Baldrige National Quality Improvement Act of 1987, which created a National Quality Award to recognize and publicize quality achievements of U.S. companies. To compete for the Award, companies must undergo a rigorous examination by an independent board of examiners composed of quality experts.

This year, for the first time in the Award's three-year history, an award has been given to a service company. This is also the first year awards have been given in all three Baldrige categories - manufacturing, services, and small business. The winners are the Cadillac Motor Car Division (Detroit, Michigan) and IBM Rochester (Rochester, Minnesota) in the manufacturing category; Wallace Co. Inc. (Houston, Texas) in the small business category; and Federal Express (Memphis, Tennessee) in the service category.

We are pleased to welcome representatives from all four companies and look forward to their comments on quality improvement strategies. We also welcome the Director of the Malcolm Baldrige National Quality Award Program who will provide a status report on the program, and address issues related to the prevention of conflicts of interest on the part of Baldrige Award examinees and the appropriate use of the award in company advertising.

For our second panel, we plan to explore the relationship between total quality principles and education, particularly how it affects the competency of our future work force. It is important to make sure our students get the training necessary to be able to function as competent workers using quality principles. All Japanese students from elementary school onward study the statistical basis of quality and quality principles as part of their regular course of study. We are interested in learning what is done to prepare the current workforce as well as the blue collar, managerial, and professional workers of the future for work environments where total quality principles are a way of life.

Welcome to all of you.

Mr. **Lewis**. Thank you, Mr. Chairman.

There are a few issues more important to U.S. competitiveness today than quality. In the 1960s, the U.S. had a positive balance of trade in the automotive sector. The label "Made In The United States" stood for quality back then, or made in Japan or South Korea was often the punch line of many jokes. However, since that time these countries has invested more time and money into quality, while the United States has fallen behind.

I am proud to say that the trend is being reversed. One of the winners of the Malcolm Baldrige Quality Award is Cadillac, and they, along with the other winners, IBM Rochester, Wallace Company, and Federal Express point to the fact that Made In The U.S.A. is fast becoming synonymous with quality again. Having had the opportunity of many of us to know Malcolm Baldrige personally and what he stood for as far as quality, I think it was fitting that this award established in his name was certainly something that would make our companies look forward to a quality challenge, and I believe they are starting to meet that challenge. If we don't meet the challenge of quality, we are not going to be competitive, and that is a fact.

So, I welcome today's witnesses and look forward to their testimony on what is the secret of quality success in America today. Thank you, Mr. Chairman.

Mr. **Valentine**. Thank you, Mr. Lewis.

The Chair is happy to recognize another distinguished member of the subcommittee from the State of Pennsylvania, Mr. Don Ritter.

Mr. **Ritter**. Thanks, Mr. Chairman.

I sincerely look forward to this afternoon's hearing on the Malcolm Baldrige National Quality Award and quality in education. For several years, quality has been a subject that has been truly near and dear to my heart, and I am appreciative of the fact that for once, rather than Congress stressing another of our many problem areas, our witnesses this afternoon represent what's indeed right in America today, and what can be made even more right.

During the 1980s, quality was the driving theme in American industry as we fought back from nearly 40 years of complacency by industry leaders, academia, government and the professions, probably using government as well. During the last several years, we've begun to return to an appreciation for not only making things, and that is manufacturing, but making them better all the time, and that is quality.

Boston University's annual survey of American manufacturing helps quantify just how extensively American firms have relied on quality management techniques to restore competitiveness. According to the survey, between 1985 and 1990, the rates of improvement in quality were faster for U.S. firms than that of their Japanese and European competitors, especially in the areas of product reliability, product performance, and defect reduction, American firms have increasingly have become internationally competitive.

The Federal Government's single, most important quality program, of course, is the Malcolm Baldrige National Quality Award. We cannot underestimate the effect that the award has had on galvanizing America's renewed commitment and return to quality. The award has had a ripple effect in the business community since most Baldrige award winners have also stipulated that their suppliers also commit to quality or face losing that company's business. And I welcome Dr. Curt Reimann who so ably has led NIST's effort in this area.

We should congratulate our witnesses today. They represent the absolute best American industry has to offer. Last year, 180,000 firms received Baldrige applications. This afternoon, we will hear from four firms out of these 180,000 potential winners that are the pinnacle of quality in American industry. These individuals and the firms they represent truly are the standard bearers. They are leading the way for American industry down the road to a more competitive U.S. economy overall.

But nowhere could the quality management lessons learned by American industry be more effectively applied in the coming decade than in the field of education. Our American education system is proving to be obsolete in preparing workers for global competition. Education and training on the job and otherwise must be enhanced at all levels in American society so that people can obtain the skills needed to adequately prepare for the increasingly competitive global economy.

Our witnesses on the second panel this afternoon represent the small but growing number of quality conscious educators and administrators who are committed to stimulating change and enhancing performance in education. If we are going to get our economic house in order, bring down our trade deficit, stop surrendering control of our jobs to foreign nations, we need nothing less than a national commitment to a culture of quality. Our witnesses today represent that ideal that we should all be striving for, that culture of quality.

Thank you.

[The prepared statement of Mr. Ritter follows:]

OPENING STATEMENT

HEARING ON THE BALDRIGE AWARD AND QUALITY IN EDUCATION

HON. DON RITTER (R-PA)
APRIL 23, 1991

Thank you, Mr. Chairman. I sincerely look forward to this afternoon's hearing on the Malcolm Baldrige National Quality Award and Quality in Education. For several years, Quality has been a subject that has been truly near and dear to my heart. And I'm really appreciative of the fact that for once--rather than stressing another of our many problem areas--our witnesses this afternoon represent what is indeed right in America today.

During the 1980s Quality was the driving theme in American industry as we fought back from nearly 40 years of complacency by industry leaders, academe, government and the professions. During the last several years, we have begun to return to an appreciation for not only making things but making them better all the time.

The Boston University's Annual Survey of American Manufacturing helps quantify just how extensively American firms have relied on Quality Management techniques to restore their competitiveness. According to the survey, between 1985 and 1990 the rates of improvement in Quality were faster for U.S. firms than that of their Japanese and European competitors. Especially in the areas of product reliability, product performance and defect reduction, American firms increasingly have become internationally competitive.

The Federal Government's single most important Quality program, of course, is the Malcolm Baldrige National Quality Award. We cannot underestimate the effect that the Award has had on galvanizing America's renewed commitment and return to Quality. The Award has had a ripple effect in the business community since most Baldrige Award winners have stipulated that their suppliers also commit to Quality or face losing that company's business.

We should congratulate our witnesses today. They represent the absolute best that American industry has to offer. Last year 180,000 firms received Baldrige applications. This afternoon we will hear from the four firms out of those 180,000 potential winners that are the pinnacle of Quality in American industry. These individuals and the firms they represent truly are the standard bearers. They are leading the way for American industry down the road to a more competitive U.S. economy.

But nowhere could the Quality Management lessons learned by American industry be more effectively applied in the coming decade than in education. Our American education system is proving to be obsolete in preparing us for global competition.

Education and training on the job and otherwise must be enhanced at all levels in American society so that people can obtain the skills needed to adequately prepare for the increasingly competitive global economy.

Our witnesses on our second panel this afternoon represent the small but growing number of Quality-conscious educators and administrators who are committed to stimulating change and enhancing performance in education.

If we are to get our economic house in order, bring down our trade deficits and stop surrendering control of our jobs to foreign nations, we need nothing less than a national commitment to a culture of Quality. Our witnesses today represent that ideal that we should all be striving for--that culture of Quality.

Thank you.

Mr. Valentine. Thank you, Mr. Ritter.

The Chair is happy to recognize at this time a member of the House's distinguished collection of Tim's, Congressman Tim Roemer from Indiana.

Mr. Roemer. I knew that name would help me out, Mr. Chairman, thank you.

I would just like to associate myself with the rest of the distinguished members here today in saluting, commending, and recognizing your hard work and your involvement in improving the quality of our workforce and our product here in an international economy.

I think it is working. I think that as we see the ripple effect of competition and higher quality of the workforce and the standards encouraged by this award go out throughout the State of Indiana third district. I am very, very happy to be here this afternoon to salute you and to recognize your hard work and courageous efforts.

Three instances in my particular district where this award has provided this kind of incentive, the people at IBM had a dinner last Wednesday night in my district where they invited 60 to 80 community and business leaders to a dinner and had that forum to listen to one of the award winners from IBM talk about what that award meant to the company, how it spurned and encouraged new business involvement, and how it affected the entire business environment in the third district of Indiana.

Secondly, I went into a LTV plant where I met with labor and business together. They have received two quality performance awards in the last two years, and labor and business were sitting there together in the same room because they were interested in how they would now compete after these two quality performance awards for the Malcolm Baldrige Award. That brought them together which we need in our country. We need to bring labor and business together in new innovative ways, and encourage that.

Thirdly, just last Friday I was at a teacher's credit union and the people there said, how do we apply as a non- profit? We want to be eligible for this award. So, I think that it is inspiring people throughout the country, and Mr. Chairman, if I have anything to say, it is that we highlight and encourage this award to the best of our ability, and we try to not dissipate or erode its meaning, but expand it to some non-profits, and maybe find a way being on the education and labor committee, that we find a way to get it into our school systems as well too.

Thank you, Mr. Chairman, I appreciate it.

Mr. Valentine. Thank you, Mr. Roemer.

The Chair recognizes another distinguished new member of the subcommittee, the gentleman from Florida, Mr. Jim Bacchus.

Mr. Bacchus. Thank you, Mr. Chairman.

In the interests of improving the quality performance of the Congress, I won't deliver a long set of remarks. Many of you have come a long way to speak with us. We are very happy that you did. I've been following the journalistic reports of your success with much interest. We are proud of all of you, and we congratulate you. Rather than complaining, you are going about the business of competing, you are bringing business and labor together. That is critical as my friend Mr. Roemer said. I applaud each of you and look forward to hearing what you have say.

Thank you, Mr. Chairman.

Mr. VALENTINE. Thank you, sir.

Our first panel today consists of Dr. Curt W. Reimann, who is director of the Malcolm Baldrige National Quality Award, of course, with the National Institute of Science and Technology from Gaithersburg, Maryland.

Also we have on this panel representatives of the winners, not necessarily in order of importance or merit. Mr. Michael E. Spiess, but not necessarily otherwise—find some way, I should have stopped before it started—Mr. Michael E. Spiess who is executive vice president of Wallace Company, Incorporated, or Wallace Co., Inc. from Houston, Texas; Mr. John R. West, manager of corporate quality improvement of Federal Express Corporation from Memphis, Tennessee; Mr. Larry Osterwise, Vice President, Marketing Driven Quality Assessment, IBM USA of Purchase, New York; and Ms. Rosetta Riley, Director, Customer Satisfaction, Cadillac Motor Car Division, Detroit, Michigan.

Dr. Reimann?

STATEMENT OF DR. CURT W. REIMANN, DIRECTOR, MALCOLM BALDRIGE NATIONAL QUALITY AWARD, NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, GAITHERSBURG, MARYLAND

Dr. REIMANN. Mr. Chairman and members of the committee, I am Curt W. Reimann, Director for Quality Programs at the National Institute of Standards and Technology. I am pleased to have the opportunity once again to report to the committee on progress with the Malcolm Baldrige National Quality Award program.

The year 1990 was a transition year for the program. We experienced a great surge in interest and participation. The active support by President Bush and Secretary Mosbacher have been crucial to the acceptance of the award as a quality rallying point for the Nation.

Today, I would like to summarize noteworthy observations and trends in the program, and outline some of the issues that lie ahead. Since my report to the committee on March 20, 1990, national and international awareness and interest in the Baldrige Award have undergone tremendous growth. This is reflected in three indices of interest: applications, guidelines distributed, and applications to serve on the Award's board of examiners.

For years three and four, taken together, compared with years one and two, applications in the manufacturing category are up 22 percent; applications in the service category are up 160 percent; and applications in the small business category are up 252 percent. Guideline distribution is up more than 450 percent; and applications to serve on the board of examiners are up more than 400 percent.

In my report to the committee two years ago, I emphasized that the design of the Award placed primary focus on criteria that could serve also as a device for information transfer, training and self-assessment. Although criteria were developed especially for businesses, we envision that the criteria would be readily adapted by organizations of all types—health care, government, education, and business— whether or not the organization is eligible to apply or wishes to apply.

Let me give you three other examples of positive developments. First, we are seeing the creation of numerous quality networks throughout the United States. These networks include those based on geography, supplier, customer relationships, industry type, and type of profession.

Second, there are now many training courses that use Baldrige Award training materials. These courses have already reached several thousand individuals.

Third, we see a growing business school and other academic interest. Many schools throughout the U.S. are reviewing curricula and offering new quality-related courses. In my view, the increased involvement by academics is one of the healthiest and most far-reaching developments associated with the national effort.

The nine award winners in the first three years of the program have played an enormous role in building public awareness of quality. We estimate that the award winners have already given more than 5,000 presentations attended by several hundred thousand organizations. The award program is deeply indebted to the award winners for public service well beyond our highest expectations.

It is interesting to note that the Baldrige Award is already visible throughout the world. We have had inquiries from more than 25 countries, including Japan, and several countries are developing or planning awards of their own. Naturally we are pleased that the Baldrige Award, after only three years, is exerting great influence throughout the world. We believe that this international interest could translate into trade advantages for the U.S.

As we look to 1992 and beyond, the program is not without issues to face and improvements to make. As part of the Baldrige Award process, all aspects of the program are reviewed each year. Advertising by the award winners has contributed enormously to public awareness of the program, and of the importance of quality. However, some questions have been raised about advertising and about the mechanisms for assuring that advertisements are accurate and appropriate. NIST is reviewing this issue with past winners and with the board of overseers. The board is working with us to strengthen guidelines which would be used for future advertising.

Questions have also been raised regarding potential conflicts of interest for examiners in the review process. Naturally the conflict issue is an important one as the Public Law #100-107, the public law that created the award, calls for a peer review, and peer reviews require careful rules of conduct. The potential for conflict is carefully considered at all four stages of evaluation. Examiners do not evaluate companies for which they have a linkage, nor do they evaluate competitors of such companies. At no time during the review do examiners receive any information from the program regarding companies where such conflict may exist. For examiners merely to request such information would represent a serious violation of the conflict rules.

Safeguards and checks are built into the entire review process. Let me illustrate this by describing part of our process. In the first stage of our four stage review, for example, each application is evaluated independently by six different examiners at six different locations. An examiner isn't told which five of the other 220 members of the board is also evaluating the application. Any effort to seek such information would be a violation of the rules. The six independent reviews produce not only scores, but detailed written commentary on specific strengths and weaknesses in 32 areas of quality management. This first stage review requires an average of more than 12 hours for each of the six examiners. Examiners are under considerable pressure to do a fair and competent review, as their work is ultimately compared with that of their peers. This outline of our safeguards, which includes only a few of the many steps we take to insure fairness and competence, should underscore the great care we take.

Let me add another point regarding our examination team. All members of the team, even those who have served in previous years, take part in a three-day training course. The course is preceeded by a 16-hour homework assignment. Included in the course is an outline of all requirements such as review procedures, potential conflicts of interest, and responsibilities of all parties in the review.

The board of overseers and the panel of judges regularly consider a wide range of issues relating to the health, vitality and direction of the award program. Over the next several months, the board of overseers will develop recommendations for the Secretary of Commerce regarding these and other important issues.

The committee's interest in the education part of the national quality picture is, in my view, well timed and appropriate. In addition to being a major issue in its own right, our education system is a key supplier to all the other sectors. We have learned from Baldrige Award participants that American businesses are paying large sums to educate and re-educate employees. The Nation's remediation bill is significant. Clearly we cannot properly address national competitiveness without addressing education quality.

We are pleased to report that inquiries from education organizations are now a routine occurrence for the Baldrige Award program. Only two years ago, such inquiries were rare. As for an education category for awards, many factors, including resources, need to be considered. In any case, the networking currently taking place across the U.S. leads me to believe that we are already making major progress in injecting quality values and techniques into our education system.

My overall assessment of progress in reaching the aims of the law is very positive. Standards are clearer and higher. Awareness of the need to improve quality is now much greater than when the law was passed. This awareness extends to all sectors, not just those eligible to compete for awards. One point we have continued to make in our three plus years of experience with the program, and that is that the Baldrige Award is more than a contest—it is a value system, a vehicle for cooperation, an agent for change.

I am often asked how I think the award program is progressing and whether or not I am satisfied. The best response I can offer is to paraphrase our award winners here. "We are off to a good start, but much remains to be done."

[The prepared statement of Dr. Reimann follows:]

NIST
UNITED STATES
DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS
AND TECHNOLOGY

U.S. DEPARTMENT OF COMMERCE

STATEMENT OF

DR. CURT W. REIMANN

DIRECTOR FOR QUALITY PROGRAMS

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

BEFORE THE

SUBCOMMITTEE ON TECHNOLOGY AND COMPETITIVENESS

ON

THE MALCOLM BALDRIGE NATIONAL QUALITY AWARD

U.S. HOUSE OF REPRESENTATIVES

APRIL 23, 1991

Mr. Chairman and members of the Committee:

I am Curt W. Reimann, Director for Quality Programs at the National Institute of Standards and Technology. I am pleased to have the opportunity, once again, to report to the Committee on progress in implementing the Malcolm Baldrige National Quality Award Program.

The year 1990 was a transition year for the Program. We experienced a great surge in interest and participation. The year closed with the Awards presentation by President Bush and other ceremonies led by Secretary Mosbacher. The active support by the President and the Secretary have played a major role in the rapid acceptance of the Award as a quality rallying point for the Nation. We are pleased that Secretary Mosbacher has included quality as a central element in the President's Export Promotion Initiative.

Today I would like to summarize noteworthy observations and trends in the program and outline some of the issues that lie ahead as we begin planning for the fifth year which begins after our fourth round of Awards in the fall.

Since my report to the Committee on March 20, 1990, national and international awareness and interest in the Baldrige Award have undergone tremendous growth. Three indices of interest -- applications, guidelines distributed, and applications to serve on the Award's Board of Examiners -- are summarized in the following Table.

BALDRIGE AWARD TRENDS

	1988	1989	1990	1991
Award Applicants				
• Manufacturing	45	23	45	38
• Service	9	6	18	21
• Small Business	12	11	34	47
Total Applicants	66	40	97	106
Examiner Applicants	140	243	592	1332
Guideline Distribution	12,000	65,000	180,000	250,000 (estimated)

The figures given in the Table reveal some interesting and important facts. For years 3 and 4, taken together, compared with years 1 and 2: (1) applications in the manufacturing category are up 22%, applications in the service category are up 160%, and applications in the small business category are up 252%; (2) applications to serve on the Board of Examiners are up more than 400%; and (3) guideline distribution is up more than 450%.

Overall, these data show increased and more balanced participation. It is particularly gratifying that the 47 applications by small businesses in 1991 is the largest number of applications in any category in the four years of the program.

In my report to the Committee two years ago I emphasized that NIST's design of the Award Program placed primary focus on Award criteria that could serve also as a device for information transfer, training, and self-assessment. Although they were developed especially for manufacturing and for-profit service organizations, we envisioned that the criteria would be readily adapted by organizations of any type -- health care, government, education, and business -- whether or not the organization is eligible to apply or is interested in applying. It was our view that quality management is a generic concept and that communication and cooperation among the sectors would be fostered by this harmonization of requirements. In addition, it was our intent to have the Award criteria simulate real competition so that preparation of an application would be a logical extension of addressing marketplace requirements.

During 1990, adoption of the quality management concepts in the Award criteria began to accelerate. Among the many indicators of change are:

- creation of numerous networks throughout the U.S. These networks include those based on geography, supplier-customer relationships, industry type, and type of profession. Among the many networks at the state and local levels, most include "mixed" communities -- businesses, health care organizations, government agencies, and schools. Several states now offer awards and other states are in the process of developing Awards.

- training courses based upon the materials developed for the training of Baldrige Award Board of Examiners. These courses, some given through professional societies, have already reached several thousand individuals.

- business school and other academic interest. Many schools throughout the U.S. are reviewing curricula, offering new quality-related courses, or modifying existing courses. The American Assembly of Collegiate Schools of Business, the professional society of business school Deans, is now holding its annual meeting with "managing for quality" as its focus. In addition to revision of curricula, there are now a number of research projects underway, and there is much discussion of a research agenda. In my view, the increased involvement by academics is one of the healthiest and most far-reaching developments associated with the national initiative launched through P.L. 100-107.

- Applications by individuals to serve on the Board of Examiners come from all sectors of the economy and from almost all states. To date, we have had participants from about 40 states. Our current roster includes people from 38 states, and includes individuals from education, business, health care, and government.

The nine Award winners in the first three years of the Program have played an enormous role in building public awareness of and interest in quality. We estimate that the Award winners have already given more than 5,000 presentations attended by several hundred thousand organizations. Their sharing activities have reached all sectors of the economy. The winners have been particularly effective in reaching senior executives of other organizations. The Award Program is deeply indebted to the Award winners for public service well beyond even the highest expectations NIST had for them when the Program was launched.

It is interesting to note that the Baldrige Award is already visible throughout the world. We have had inquiries from more than 25 countries, including Japan, and several countries are developing or planning awards of their own. Perhaps the most noteworthy of the awards elsewhere is one under development by the European Foundation for Quality Management. This award, to be launched next year, reflects the growth in interest in quality in the European community. The European award as well as several national awards are drawing on the Baldrige Award as the international benchmark. In North America, Mexico has created an award based directly on the Baldrige Award, and Canada has undertaken a detailed study of the Baldrige Award as part of its review of the quality factor in trade. Naturally we are pleased that the Baldrige Award is exerting great influence throughout the world after three years. We believe that this international interest could translate into trade advantages for the U.S. as other nations realize that the U.S. is really serious about improving quality.

As we look to 1992 and beyond, the Program is not without issues to face and improvements to make. As part of the Baldrige Award process, all aspects of the Award Program are reviewed each year to improve the Award in reaching the goals established in P.L. 100-107. Each year the Award criteria have been refined to be more explicit and clear, and as balanced as possible for all sectors. The 1991 criteria are more results oriented, and more "user friendly" for the many uses the criteria receive. In addition, we have improved the feedback system, evaluation processes, and training of Examiners. In making improvements, we solicit comments from Overseers, Examiners, and applicants. The improvement process is a very important part of our efforts to create a credible, high-prestige Award.

Advertising by the Award winners has contributed enormously to public awareness of the Program and the importance of quality improvement in general. Some questions have been raised about the accuracy of individual advertisements and the mechanisms for assuring that advertisements are appropriate. NIST has discussed this issue with past winners and with the private sector Board of Overseers for the Award. The Board has expressed an interest in strengthening written guidelines which would be used for future advertising. Such voluntary guidelines would be very useful to NIST and future winners.

Some questions have been raised regarding potential conflicts of interest for Examiners in the review process. Naturally, the conflict issue is an important one, as P.L. 100-107 calls for a peer review, and peer reviews require careful rules on conduct. The potential for conflict is carefully considered at all four stages of evaluation. Examiners do not evaluate companies for which they have a linkage. Nor do they evaluate competitors of such companies. At no time during the review do Examiners receive any information from the Program regarding companies where such conflict may exist. For Examiners merely to request such information would represent a serious violation of the conflict rules.

Safeguards and checks are built into the entire review process. Let me illustrate this care by describing part of our process. In the first stage of our four-stage review, for example, each application is evaluated independently by six different Examiners in six different locations. An Examiner isn't told which five of the other 220 Examiners is also evaluating the application. Any effort to seek such information would be a violation of the rules of the review. The six independent reviews produce not only scores but detailed written commentary on strengths and weaknesses in 32 areas of quality management. This first-stage review requires an average of more than 12 hours for each of the six Examiners. Examiners are under considerable pressure to do a fair and competent review, as their work is ultimately compared with that of their peers. This outline of our safeguards, which includes only a few of the many steps we take to ensure fairness and competence, should underscore the great care we take to maintain high credibility.

Let me add another point regarding our Examiner team. All members of the team, even those who have served in previous years, take part in a three-day training course. The course is preceded by a sixteen hour homework assignment that must be completed before coming to class. Included in the course, is an outline of all requirements such as review procedures , potential conflicts of interest, and responsibilities of all parties in the review.

The Board of Overseers and the Panel of Judges regularly consider a wide range of issues relating to the health, vitality, and direction of the Award Program. Issues relating to the Award categories and the number of Awards per category are always on the agenda at Board meetings. There are many factors, including resources, to consider in developing recommendations for any changes. Although government, education, and most of health care are now excluded from Award competition, many practitioners from these sectors are now involved in the Award Program, and much of the overall information transfer now taking place involves these sectors. Over the next several months the Board of Overseers will develop recommendations for the Secretary of Commerce regarding these important issues.

The Committee's interest in the education part of the national quality picture is, in my view, well-timed and appropriate. In addition to being a major issue in its own right, our education system is a key supplier to all the other sectors. We have learned from Baldrige Award participants that American businesses are paying large sums to educate and re-educate employees. The Nation's remediation bill is significant. Clearly, we cannot properly address national competitiveness without addressing education quality.

Inquiries from education organizations are now a routine occurrence for the Baldrige Award Program. Only two years ago, such inquiries were rare. Much of the interest stems from the business community -- Baldrige Award winners and others -- who see that quality management techniques are readily adaptable to schools and school systems. Most of the state and local networks I mentioned earlier include education organizations. The Baldrige Award criteria represent a common language, promoting communications across non-traditional lines. In addition to providing a common language, the Baldrige Award criteria include two specific areas where businesses are encouraged to work with schools. As a result, we see many companies building linkages to schools. The collaborations between education and business now taking place represent a very healthy development, and should be expanded, in my opinion.

As for an education category for Awards, many factors, including resources, need to be considered. Other factors include the availability of expert Examiners, the current understanding of quality in schools, and training requirements and costs. The current fee structure for the Baldrige Award would put participation out of reach for most schools. Finally, I believe that if a quality award for education is to be developed, it should be integrated into the overall national education strategy to ensure that programs are mutually reinforcing. In any case, the networking currently taking place across the U.S. leads me to believe that we are making progress in injecting quality values and techniques into our education system.

My overall assessment of progress toward reaching the aims of P.L. 100-107 is very positive. Standards are clearer and higher, and the level of awareness of the need to improve quality is now much greater than when the law was passed. This awareness extends to all sectors, not just those eligible to compete for Awards. One point we have continued to make in our 3-plus years experience with this Program is that the Baldrige Award is more than a contest. It is a value system -- a vehicle for cooperation -- an agent for change.

I am often asked how I think the Award Program is progressing, and whether or not I am satisfied. The best response I can offer is to paraphrase what many of our Award winners say: we are off to a good start, but much remains to be done.

Malcolm Baldrige
National
Quality
Award

CURT W. REIMANN

Director
Malcolm Baldrige National Quality Award

Dr. Curt W. Reimann is Director of the Malcolm Baldrige National Quality Award and Associate Director for Quality Programs at the National Institute of Standards and Technology (NIST). The Malcolm Baldrige National Quality Award, created by Public Law 100-107, was established to promote quality awareness, recognize excellent U.S. companies, and publicize successful quality strategies. A private sector Foundation has been set up to raise funds for the public/private cooperative Award Program.

Prior to his current assignment, Dr. Reimann served as Deputy Director of the National Measurement Laboratory, the NIST organization responsible for developing and maintaining the Nation's basic physical, chemical, and radiation measurements and standards. Earlier, Dr. Reimann served as Director of the NIST Center for Analytical Chemistry. This Center develops chemical measurements and standards for ensuring the reliability of measurements made in manufacturing, clinical testing, environmental monitoring, and research and development. Dr. Reimann is the recipient of the Department of Commerce Gold Medal for leadership of NIST services in chemical measurements.

Dr. Reimann began his career at NIST in 1962 as a research chemist. Concurrent with his research activities, he was Adjunct Professor of Chemistry at the University of Maryland for three years. Dr. Reimann received his B.A. in Chemistry from Drew University and a Ph.D. from the University of Michigan. After completing his doctoral work, he was a NSF-NRC Postdoctoral Fellow at Yale University.

In 1989, Dr. Reimann was recognized by The Quality Review as one of the "Ten Most Influential Figures in Quality for 1988." Also in 1989, the American Society for Quality Control presented Dr. Reimann with a Testimonial Award for leadership "in establishing the Malcolm Baldrige National Quality Award Program for the United States."

04/91

1991 Application Guidelines

Malcolm Baldrige
National
Quality
Award

"The improvement of quality in products and the improvement of quality in service – these are national priorities as never before."

George Bush

"Quality is the key to increasing our exports around the world and to a strong economy that assures job growth."

Robert Mosbacher
Secretary of Commerce

Crystal by Steuben Glass
Medal by Medallic Art

The Award is a three-part solid crystal stele standing 14 inches tall. An 18-karat gold-plated medal is embedded in its central form. The medal bears the inscriptions: "Malcolm Baldrige National Quality Award" and "The Quest for Excellence" on one side and the Presidential seal on the other side.

In previous years, Awards were presented by the President of the United States at special ceremonies in Washington, D.C.

Award recipients may publicize and advertise receipt of the Award and will receive recognition for sharing information about their successful quality strategies.

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THE MALCOLM BALDRIGE NATIONAL QUALITY AWARD: A PUBLIC-PRIVATE PARTNERSHIP

Fundamental to the success of the Award in improving quality in the United States is building an active partnership between the private sector and government. Support by the private sector for the Award Program in the form of funds, volunteer efforts, and participation in information transfer is strong and growing rapidly. The Foundation for the Malcolm Baldrige National Quality Award was created to foster such partnerships. One of the Foundation's objectives is to raise sufficient funds to establish an endowment which, when supplemented by fees from Award applicants, will permanently fund the Award Program. Prominent leaders from major companies have been selected to serve as Foundation Trustees to assure the Foundation's objectives of supporting the Award Program are accomplished. To date, $10.4 million has been raised by the Foundation.

Responsibility for the Award was assigned to the Department of Commerce. The National Institute of Standards and Technology (NIST), an agency of the Department of Commerce's Technology Administration, was given responsibility for the creation and management of the Award Program. NIST's goals are to aid U.S. industry through research and services, to contribute to public health and safety, and to support the U.S. scientific and engineering research communities. NIST conducts basic and applied research in the physical sciences and engineering and develops measurement techniques, test methods, and standards. Much of NIST's work relates directly to quality and to quality-related requirements in technology development and technology utilization.

NIST, in discharging its responsibilities, is assisted by an Award Administrator. The Award Administrator assists NIST with the application review process, preparation of Award documents, publicity, the Award ceremony, and information transfer activities.

The American Society for Quality Control (ASQC), administrator of the Award under NIST's management, is dedicated to the advancement of the theory and practice of quality control and the allied arts and sciences. ASQC has become recognized as the worldwide leader in the development, promotion, and application of quality-related information and technology for the quality profession, private sector, government, and academia. ASQC's Mission Statement recognizes that continuous quality improvement is responsible for favorably repositioning American goods and services in the international marketplace.

Applications are reviewed without funding from the United States Government. Review expenses are paid primarily through application fees; partial support for the reviews is provided by the Foundation. Through extensive volunteer efforts by members of the Board of Examiners, application review fees are kept to a minimum.

The Board of Examiners comprises quality experts selected from industry, professional and trade associations, universities, health care organizations, and government agencies. Those selected meet the highest standards of qualification and peer recognition. In addition to their examination responsibilities, Board members participate in information transfer activities within their professional, trade, community, and state organizations and collectively represent a large and growing corps of experts promoting the national quality effort.

Award recipients of the first three years have contributed enormously to the national quality effort by helping to elevate quality standards in the United States and to encourage other companies to raise their quality standards. Collectively, the recipients of the Award have shared information on successful quality strategies with tens of thousands of companies as well as with education institutions, government agencies, health care organizations, and others.

INTRODUCTION

The Malcolm Baldrige National Quality Award is an annual Award to recognize U.S. companies that excel in quality achievement and quality management.

The Award promotes:

- awareness of quality as an increasingly important element in competitiveness,
- understanding of the requirements for quality excellence, and
- sharing of information on successful quality strategies and on the benefits derived from implementation of these strategies.

There are three eligibility categories of the Award:

- Manufacturing companies,
- Service companies, and
- Small Businesses.

Up to two Awards may be given in each category each year. Award recipients may publicize and advertise based on their Awards. In addition to publicizing the receipt of the Award, recipients are expected to share information about their successful quality strategies with other U.S. organizations.

Companies participating in the Award process submit applications that include completion of the Award Examination. The Award Examination is based upon quality excellence criteria created through a public-private partnership. In responding to these criteria, applicants are expected to provide information and data on their quality processes and quality improvement. Information and data submitted must be adequate to demonstrate that the applicant's approaches could be replicated or adapted by other companies.

The Award Examination is designed to serve not only as a reliable basis for making Awards but also to permit a diagnosis of the applicant's overall quality management. All Award applicants receive Feedback Reports prepared by teams of U.S. quality experts.

In three years, the Malcolm Baldrige National Quality Award has had a significant impact on American industry. Requests for copies of the Application Guidelines have grown rapidly. In 1990, more than 180,000 copies were distributed.

The purpose of this document is twofold. First, it is designed as a guide for Award applicants. It includes a description of Award processes and requirements, the Award Examination, schedule, eligibility, fees, and application instructions. Second, it provides a basis for self-assessment by all U.S. organizations that are pursuing quality excellence.

DESCRIPTION OF THE 1991 EXAMINATION

The Award Examination is based upon criteria designed to be a quality excellence standard for organizations seeking the highest levels of overall quality performance and competitiveness. The Examination addresses all key requirements to achieve quality excellence as well as the important interrelationships among these key requirements. By focusing not only upon results but also upon the conditions and processes that lead to results, the Examination offers a framework that can be used by organizations to tailor their systems and processes toward ever-improving quality performance. Moreover, the mechanisms for tailoring are themselves included in the Examination.

Reliable evaluation relative to the Examination criteria requires considerable experience with quality systems. Nevertheless, the Examination may also be used for self-assessment and other purposes. Thousands of organizations — businesses, government, health care, and education — whether or not they are currently eligible or plan to apply for Awards, are using the Examination for a variety of purposes. These purposes include training, self-assessment, quality system development, quality improvement, and strategic planning.

Key Concepts in the Award Examination Criteria

The Award Examination is built upon a number of key concepts. Together, these concepts underlie all requirements included in the Examination Items.

- Quality is defined by the customer.
- The senior leadership of businesses needs to create clear quality values and build the values into the way the company operates.
- Quality excellence derives from well-designed and well-executed systems and processes.
- Continuous improvement must be part of the management of all systems and processes.
- Companies need to develop goals, as well as strategic and operational plans to achieve quality leadership.
- Shortening the response time of all operations and processes of the company needs to be part of the quality improvement effort.
- Operations and decisions of the company need to be based upon facts and data.
- All employees must be suitably trained and developed and involved in quality activities.
- Design quality and defect and error prevention should be major elements of the quality system.
- Companies need to communicate quality requirements to suppliers and work to elevate supplier quality performance.

Several of these concepts are described in greater detail below:

Customer-Driven Quality
Quality is judged by the customer. All product and service attributes that contribute value to the customer, lead to customer satisfaction, and affect customer preference must be addressed appropriately in quality systems. Value, satisfaction, and preference may be influenced by many factors throughout the overall purchase, ownership, and service experiences of customers. This includes the relationship between the company and customers — the trust and confidence in products and services — that leads to loyalty and preference. This concept of quality includes not only the product and service attributes that meet basic requirements, it also includes those that enhance them and differentiate them from competing offerings. Such enhancement and differentiation may include unique product-product, service-service, or product-service combinations. Customer-driven quality is thus a strategic concept. It demands constant sensitivity to customer and market information and rapid response to requirements. These requirements extend well beyond defect and error reduction, merely meeting specifications, or reducing complaints. Nevertheless, defect and error reduction and elimination of causes of dissatisfaction contribute significantly to the customers' view of quality and are thus also important parts of customer-driven quality.

Leadership
A company's senior leaders must create clear quality values, specific goals, and well-defined systems and methods for achieving the goals. The systems and methods need to guide all activities of the company and encourage participation by all employees. Through their regular personal involvement in visible activities such as goal setting, planning, review of company quality performance, and recognizing employees for quality achievement, the senior leaders reinforce the values and encourage leadership in all levels of management.

Continuous Improvement
Achieving the highest levels of quality and competitiveness requires a well-defined and well-executed approach to continuous improvement of all operations and of all work unit activities of a company. Improvements may be of several types: (1) enhancing value to the customer through improved product and service attributes; (2) reducing errors and defects; (3) improving responsiveness and cycle time performance; and (4) improving efficiency and effectiveness in use of all resources. Thus, improvement is driven not only by the objective to provide superior quality. It is driven also by the need to be responsive and

efficient — both conferring additional marketplace advantages. To meet all of these requirements, the process of continuous improvement must contain regular cycles of planning, execution, and evaluation. It must be accompanied by a basis — preferably a quantitative basis — for assessing progress, and for deriving information for future cycles of improvement.

Fast Response
Meeting customer requirements and expectations and success in competitive markets increasingly demand ever shorter product and service introduction cycles and more rapid response to customers. Indeed, fast response itself is often a major quality attribute. Reduction in cycle times and lead times and rapid response to customers can occur only when quality systems and processes are designed to meet both quality and response goals and when response time is included as a major focus of quality improvement processes. This requires that all designs, objectives, and work unit activities include measurement and monitoring of cycle time and responsiveness to seek opportunities for improvement. Major gains in response may occur when work processes and paths are simplified and shortened. Such improvements are often accompanied by simultaneous improvements in quality. Hence it is highly beneficial to consider response time and quality together.

Actions Based on Facts, Data, and Analysis
Meeting quality improvement goals of the company requires that actions in setting, controlling, and changing systems and processes be based upon reliable information, data, and analysis. Facts and data needed for quality assessment and quality improvement are of many types, including: customer, product and service performance, operations, market, competitive comparisons, supplier, and employee-related. Analysis refers to the process of extraction of larger meaning from data to support evaluation and decision making at various levels within the company. Such analysis may entail using data individually or in combination to reveal information — such as trends, projections, and cause and effect — that might not be evident without analysis. Facts, data, and analysis support a variety of company purposes, such as planning, reviewing company performance, improving operations, and comparing company quality performance with competitors'.

A major consideration relating to data and analysis in connection with quality system development, competitive performance, and continuous improvement involves the creation and use of performance indicators. Performance indicators are measurable characteristics of products, services, processes, and operations the company uses to evaluate performance and to track progress. The indicators should be selected to best represent the attributes that link to customer requirements, customer satisfaction, and competitive performance as well as to operational effectiveness and efficiency. A system of indicators thus represents a clear and objective basis for aligning all activities of the company toward well-defined goals and for tracking progress toward the goals. Through the analysis of data obtained in the tracking processes, the indicators themselves may be evaluated and changed. For example, indicators selected to measure product and service quality may be judged by how well they correlate with customer satisfaction.

Participation by all Employees
Meeting the company's quality objectives requires a fully committed, well-trained work force that is encouraged to participate in the company's continuous improvement activities. Reward and recognition systems need to reinforce participation and emphasize achievement of quality objectives. Factors bearing upon the safety, health, well-being, and morale of employees need to be part of the continuous improvement objectives and activities of the company. Employees need to receive training in basic quality skills related to performing their work and to understanding and solving quality-related problems.

Key Characteristics of the Award Examination

1. **The Examination Is Non-Prescriptive**
   The Examination is based upon the set of values embodied in the key concepts outlined above. However, the Examination does not prescribe approaches to implementation. This means that there are no specific techniques, technologies, or types of organizations required to demonstrate excellence. These may vary greatly among businesses, depending upon business size and type.
2. **The Examination Is Part of a Diagnostic System**
   The Examination (pages 6-19) and the Scoring System (pages 20-21) make up a two-part diagnostic system. The Examination Items represent *what* is to be evaluated. The Scoring System represents *how* evaluations are made.
3. **The Examination Stresses Quality System Integration**
   The Examination criteria represent a system of requirements. Integration is achieved through numerous direct and indirect relationships among Examination Items. Many Items link directly to others. Also, information is requested on company-level and unit-level quality performance. This information allows an assessment of how well the overall system is coordinated.

Framework of the Malcolm Baldrige National Quality Award Examination

The Malcolm Baldrige National Quality Award Examination consists of a three-level framework, designed for reliable evaluation and diagnosis. Applicants are required to provide information on their quality management systems, methods, and results using this framework. The three levels of the framework are: (1) Examination Categories; (2) Examination Items; and (3) Areas to Address.

Examination Categories

The Examination comprises seven Categories that represent the major components of a quality management system. The Categories are:

1.0 Leadership

2.0 Information and Analysis

3.0 Strategic Quality Planning

4.0 Human Resource Utilization

5.0 Quality Assurance of Products and Services

6.0 Quality Results

7.0 Customer Satisfaction

Examination Items

Examination Categories each contain two or more Examination Items. In all, there are 32 Examination Items among the seven Categories. Each Item focuses on a major element of an effective quality system. All information submitted by applicants is in response to the specific requirements given with these Items. Each Item is assigned an Examination point value given with the Item. Item titles and point values are given on page 5.

Areas to Address

Each Examination Item includes a set of Areas to Address (Areas) designated by lower-case letters and enclosed in rectangles. The Areas serve to illustrate and clarify the intent of the Items and to place limits on the types and amounts of information the applicant should provide. Areas are not assigned individual point values, because their relative importance depends upon factors such as the applicant's type and size of business and quality system.

Changes from the 1990 Examination

The 1991 Examination follows the same basic framework and approach used in 1990. However, numerous changes have been made to improve clarity and to make requirements more explicit. Major changes are:

- The number of Examination Items has been reduced from 33 to 32 by combining two Items (6.1 and 6.2) from the 1990 Examination into 6.1 in the 1991 Examination. Applicants now address quality results and comparison of quality results in one Item.
- Item 3.2 from the 1990 Examination (Quality Leadership Indicators in Planning) has been moved to Category 2.0 and is now Item 2.2 (Competitive Comparisons and Benchmarks). The change in location and title emphasizes the fact that comparisons and benchmarks support not only planning but also many other activities of the company. Competitive comparisons and benchmarks remain central issues in planning.
- Much greater weight is placed upon Item 7.2 (Customer Relationship Management) because of its great importance not only to service companies but also to the service components of manufacturing companies. Item 7.2 now requires applicants to provide more detailed information on all key aspects of managing and developing their customer-contact personnel.
- The number of Areas to Address has been reduced from 133 in 1990 to 99 in 1991. The reduction reflects a continuing effort to focus on the most important quality requirements and to combine related Areas, minimizing overlap, so that applicants may respond to each requirement in greater detail.
- Point values have been adjusted giving greater weight to results than in the past. This shift reflects the requirements for strengthening the Examination as a device for distinguishing among the best applicants. However, reductions in point values for some Items should not be interpreted to mean that these Items are now judged to be less significant elements in quality systems than before.
- The overall Examination is better integrated. This is done in two ways: (1) greater use of Item notes; and (2) more use of direct references in Items.
- More emphasis is placed on the key concepts outlined on pages 2 and 3.
- The educational value of the Examination and the Scoring System has been enhanced. This should encourage their wider use in training and self-assessment.

Though the 1991 Examination Items focus on the same basic quality system elements as those in 1990, *specific requirements have changed for most Items.* In general, applicants need to be more specific in describing methods, processes, and results.

1991 EXAMINATION CATEGORIES AND ITEMS

Malcolm Baldrige National Quality Award

1991 Examination Categories/Items		Maximum Points
1.0 Leadership		100
1.1 Senior Executive Leadership	40	
1.2 Quality Values	15	
1.3 Management for Quality	25	
1.4 Public Responsibility	20	
2.0 Information and Analysis		70
2.1 Scope and Management of Quality Data and Information	20	
2.2 Competitive Comparisons and Benchmarks	30	
2.3 Analysis of Quality Data and Information	20	
3.0 Strategic Quality Planning		60
3.1 Strategic Quality Planning Process	35	
3.2 Quality Goals and Plans	25	
4.0 Human Resource Utilization		150
4.1 Human Resource Management	20	
4.2 Employee Involvement	40	
4.3 Quality Education and Training	40	
4.4 Employee Recognition and Performance Measurement	25	
4.5 Employee Well-Being and Morale	25	
5.0 Quality Assurance of Products and Services		140
5.1 Design and Introduction of Quality Products and Services	35	
5.2 Process Quality Control	20	
5.3 Continuous Improvement of Processes	20	
5.4 Quality Assessment	15	
5.5 Documentation	10	
5.6 Business Process and Support Service Quality	20	
5.7 Supplier Quality	20	
6.0 Quality Results		180
6.1 Product and Service Quality Results	90	
6.2 Business Process, Operational, and Support Service Quality Results	50	
6.3 Supplier Quality Results	40	
7.0 Customer Satisfaction		300
7.1 Determining Customer Requirements and Expectations	30	
7.2 Customer Relationship Management	50	
7.3 Customer Service Standards	20	
7.4 Commitment to Customers	15	
7.5 Complaint Resolution for Quality Improvement	25	
7.6 Determining Customer Satisfaction	20	
7.7 Customer Satisfaction Results	70	
7.8 Customer Satisfaction Comparison	70	
TOTAL POINTS		1000

1991 EXAMINATION

1.0 Leadership ([illegible]

The ***Leadership*** **category examines how senior executives create and sustain clear and visible quality values along with a management system to guide all activities of the company toward quality excellence. Also examined are the senior executives' and the company's quality leadership in the external community and how the company integrates its public responsibilities with its quality values and practices.**

1.1 Senior Executive Leadership *(40 pts.)*

Describe the senior executives' leadership, personal involvement, and visibility in developing and maintaining an environment for quality excellence.

AREAS TO ADDRESS

a. senior executives' leadership, personal involvement, and visibility in quality-related activities of the company: (1) goal setting; (2) planning; (3) reviewing company quality performance; (4) communicating with employees; and (5) recognizing employee contributions. Other activities may include participating in teams, learning about the quality of domestic and international competitors, and meeting with customers and suppliers.

b. senior executives' approach to building quality values into the leadership process of the company

c. senior executives' leadership and communication of quality excellence to groups outside the company. Groups may include national, state, community, trade, business, professional, education, health care, standards, and government organizations.

Notes:

(1) The term "senior executives" refers to the highest-ranking official of the organization applying for the Award and those reporting directly to that official.

(2) The type and extent of the activities of senior executives within and outside the company could depend upon company size, resources, and other business factors (see Business Factors, pages 22-23).

1.2 Quality Values *(15 pts.)*

Describe the company's quality values, how they are projected in a consistent manner, and how adoption of the values throughout the company is determined and reinforced.

AREAS TO ADDRESS

a. brief summary of the content of policy, mission, or guidelines that demonstrate the company's quality values

b. company's communications activities to project the quality values throughout the company. Briefly describe what is communicated and the means and frequency of communications.

c. how the company determines and evaluates how well the quality values have been adopted throughout the company, such as through surveys, interviews, or other means, and how employee adoption is reinforced

1.3 Management for Quality *(25 pts.)*

Describe how the quality values are integrated into day-to-day leadership, management, and supervision of all company units.

AREAS TO ADDRESS

a. key approaches for involving, and encouraging leadership in, all levels of management and supervision in quality; principal roles and responsibilities at each level

b. key approaches for promoting cooperation among managers and supervisors across different levels and different functions of the company

c. types, frequency, and content of reviews of company and of unit quality performance; types of actions taken to assist units not performing according to plans or goals

d. key indicators the company uses to evaluate the effectiveness of its approaches to integrating quality values into day-to-day management and how the evaluation is used to improve its approaches

Note: *Key indicators refer to principal measures of some characteristics of quality or effectiveness.*

1.4 Public Responsibility

(20 pts.)

Describe how the company extends its quality leadership to the external community and includes its responsibilities to the public for health, safety, environmental protection, and ethical business practice in its quality policies and improvement activities.

AREAS TO ADDRESS

- a. how the company promotes quality awareness and sharing with external groups. Groups may include national, state, community, trade, business, professional, education, health care, standards, and government organizations.
- b. how the company encourages employee leadership and involvement in quality activities of organizations mentioned above
- c. how the company includes its public responsibilities such as business ethics, public health and safety, environmental protection, and waste management into its quality policies and practices. For each area relevant and important to the company's business, briefly summarize: (1) principal quality improvement goals and how they are set: (2) principal improvement methods; (3) principal indicators used to monitor quality; and (4) how and how often progress is reviewed.

Notes:

(1) Health and safety of employees are not covered in this Item. These are addressed in Item 4.5.

(2) See Business Factors, pages 22-23.

2.0 Information and Analysis [illegible]

The ***Information and Analysis*** category examines the scope, validity, use, and management of data and information that underlie the company's overall quality management system. Also examined is the adequacy of the data, information, and analysis to support a responsive, prevention-based approach to quality and customer satisfaction built upon "management by fact."

2.1 Scope and Management of Quality Data and Information *(20 pts.)*

Describe the company's base of data and information used for planning, day-to-day management, and evaluation of quality, and how data and information reliability, timeliness, and access are assured.

AREAS TO ADDRESS

- a. (1) criteria for selecting data to be included in the quality-related data and information base; and (2) scope and types of data: customer-related; internal operations and processes; employee-related; safety, health, and regulatory; quality performance; supplier quality; and other
- b. processes and techniques the company uses to ensure reliability, consistency, standardization, review, timely update, and rapid access throughout the company. If applicable, describe approach to ensuring software quality.
- c. how the company evaluates and improves the scope and quality of its data and information and how it shortens the cycle from data gathering to access

Notes:

(1) The purpose of this Item is to permit the applicant to demonstrate the breadth and depth of the data assembled as part of its total quality management system. Applicants should give brief descriptions of the types of data under major headings such as "employees" and subheadings such as "education and training," "teams," and "recognition." Under each subheading, give a brief description of the data and information. Actual data should not be reported in this Item. Such data are requested in other Examination Items.

(2) Information on the scope and management of competitive and benchmark data is requested in Item 2.2.

2.2 Competitive Comparisons and Benchmarks *(30 pts.)*

Describe the company's approach to selecting quality-related competitive comparisons and world-class benchmarks to support quality planning, evaluation, and improvement.

AREAS TO ADDRESS

a. criteria and rationale the company uses for seeking competitive comparisons and benchmarks: (1) relationship to company goals and priorities for improvement of product and service quality and/or company operations; (2) with whom to compare — within and outside the company's industry

b. current scope of competitive and benchmark data: (1) product and service quality; (2) customer satisfaction and other customer data; (3) supplier performance; (4) employee data; (5) internal operations, business processes, and support services; and (6) other. For each type: (a) list sources of comparisons and benchmarks, including company and independent testing or evaluation; and (b) how each type of data is used.

c. how the company evaluates and improves the scope, sources, and uses of competitive and benchmark data

2.3 Analysis of Quality Data and Information *(20 pts.)*

Describe how data and information are analyzed to support the company's overall quality objectives.

AREAS TO ADDRESS

a. how data described in 2.1 and 2.2, separately and in combination, are analyzed to support: (1) company planning and priorities; (2) company-level review of quality performance; (3) improvement of internal operations, business processes, and support services; (4) determination of product and service features and levels of quality performance that best predict improvement in customer satisfaction; and (5) quality improvement projections based upon potential use of alternative strategies or technologies

b. how the company evaluates and improves its analytical capabilities and shortens the cycle of analysis and access to analytical results

Note: *This Item focuses primarily on analysis for company-level evaluation and decision making. Some other Items request information based on analysis of specific sets of data for special purposes such as human resource practices and complaint management.*

3.0 Strategic Quality Planning

The ***Strategic Quality Planning*** category examines the company's planning process for achieving or retaining quality leadership and how the company integrates quality improvement planning into overall business planning. Also examined are the company's short-term and longer-term plans to achieve and/or sustain a quality leadership position.

3.1 Strategic Quality Planning Process

(35 pts.)

Describe the company's strategic quality planning process for short-term (1-2 years) and longer-term (3 years or more) quality leadership and customer satisfaction.

AREAS TO ADDRESS

a. how goals for quality leadership are set using: (1) current and future quality requirements for leadership in the company's target markets; and (2) company's current quality levels and trends versus competitors' in these markets

b. principal types of data, information, and analysis used in developing plans and evaluating feasibility based upon goals: (1) customer requirements; (2) process capabilities; (3) competitive and benchmark data; and (4) supplier capabilities; outline how these data are used in developing plans

c. how strategic plans and goals are implemented and reviewed: (1) how specific plans, goals, and performance indicators are deployed to all work units and suppliers; and (2) how resources are committed for key requirements such as capital expenditures and training; and (3) how performance relative to plans and goals is reviewed and acted upon

d. how the goal-setting and strategic planning processes are evaluated and improved

Notes:

(1) Strategic quality plans address in detail how the company will pursue market leadership through providing superior quality products and services and through improving the effectiveness of all operations of the company.

(2) Item 3.1 focuses on the processes of goal setting and strategic planning. Item 3.2 focuses on actual goals and plans.

3.2 Quality Goals and Plans *(25 pts.)*

Summarize the company's goals and strategies. Outline principal quality plans for the short term (1-2 years) and longer term (3 years or more).

AREAS TO ADDRESS

a. major quality goals and principal strategies for achieving these goals

b. principal short-term plans: (1) summary of key requirements and performance indicators deployed to work units and suppliers; and (2) resources committed to accomplish the key requirements

c. principal longer-term plans: brief summary of major requirements, and how they will be met

d. two- to five-year projection of significant changes in the company's most important quality levels. Describe how these levels may be expected to compare with those of key competitors over this time period.

Note: ***The company's most important quality levels are those for the key product and service quality features. Projections are estimates of future quality levels based upon implementation of the plans described in Item 3.2.***

4.0 Human Resource Utilization (150 pts.)

The ***Human Resource Utilization*** category examines the effectiveness of the company's efforts to develop and realize the full potential of the work force, including management, and to maintain an environment conducive to full participation, quality leadership, and personal and organizational growth.

4.1 Human Resource Management *(20 pts.)*

Describe how the company's overall human resource management effort supports its quality objectives.

AREAS TO ADDRESS

a. how human resource plans are derived from the quality goals, strategies, and plans outlined in 3.2: (1) short term (1-2 years); and (2) longer term (3 years or more). Address major specific requirements such as training, development, hiring, involvement, empowerment, and recognition.

b. key quality goals and improvement methods for human resource management practices such as hiring and career development

c. how the company analyzes and uses its overall employee-related data to evaluate and improve the effectiveness of all categories and all types of employees

Notes:

(1) Human resource plans and improvement activities might include one or more of the following: mechanisms for promoting cooperation such as internal customer/supplier techniques or other internal partnerships; initiatives to promote labor-management cooperation such as partnerships with unions; creation or modifications in recognition systems; mechanisms for increasing or broadening employee responsibilities; and education and training initiatives. They might also include developing partnerships with educational institutions to develop employees and to help ensure the future supply of well-prepared employees.

(2) "Types of employees" takes into account factors such as employment status, bargaining unit membership, and demographic makeup.

4.2 Employee Involvement *(40 pts.)*

Describe the means available for all employees to contribute effectively to meeting the company's quality objectives; summarize trends and current levels of involvement.

AREAS TO ADDRESS

a. management practices and specific mechanisms, such as teams or suggestion systems, the company uses to promote employee contributions to quality objectives, individually and in groups. Summarize how and when the company gives feedback.

b. company actions to increase employee authority to act (empowerment), responsibility, and innovation. Summarize principal goals for all categories of employees.

c. key indicators the company uses to evaluate the extent and effectiveness of involvement by all categories and types of employees and how the indicators are used to improve employee involvement

d. trends and current levels of involvement by all categories of employees. Use the most important indicator(s) of effective employee involvement for each category of employee.

Note: *Different involvement goals and indicators may be set for different categories of employees, depending upon company needs and upon the types of responsibilities of each employee category.*

4.3 Quality Education and Training *(40 pts.)*

Describe how the company decides what quality education and training is needed by employees and how it utilizes the knowledge and skills acquired; summarize the types of quality education and training received by employees in all employee categories.

AREAS TO ADDRESS

a. (1) how the company assesses needs for the types and amounts of quality education and training received by all categories of employees (Describe how the needs assessment addresses work unit requirements to include or have access to skills in problem analysis and problem solving to meet their quality objectives.); (2) methods for the delivery of quality education and training; and (3) how the company ensures on-the-job reinforcement of knowledge and skills

b. summary and trends in quality education and training received by employees. The summary and trends should address: (1) quality orientation of new employees; (2) percent of employees receiving quality education and training in each employee category annually; (3) average hours of quality education and training annually per employee; (4) percent of employees who have received quality education and training; and (5) percent of employees who have received education and training in statistical and other quantitative problem-solving methods.

c. key methods and indicators the company uses to evaluate and improve the effectiveness of its quality education and training. Describe how the indicators are used to improve the quality education and training of all categories and types of employees.

Note: *Quality education and training addresses the knowledge and skills employees need to meet the quality objectives associated with their responsibilities. This may include basic quality awareness, problem solving, meeting customer requirements, and other quality-related aspects of skills.*

4.4 Employee Recognition and Performance Measurement *(25 pts.)*

Describe how the company's recognition and performance measurement processes support quality objectives; summarize trends in recognition.

AREAS TO ADDRESS

a. how recognition, reward, and performance measurement for individuals and groups, including managers, supports the company's quality objectives; (1) how quality relative to other business considerations such as schedules and financial results is reinforced; and (2) how employees are involved in the development and improvement of performance measurements

b. trends in recognition and reward of individuals and groups, by employee category, for contributions to quality

c. key indicators the company uses to evaluate and improve its recognition, reward, and performance measurement processes

4.5 Employee Well-Being and Morale *(25 pts.)*

Describe how the company maintains a work environment conducive to the well-being and growth of all employees; summarize trends and levels in key indicators of well-being and morale.

AREAS TO ADDRESS

- **a.** how well-being and morale factors such as health, safety, satisfaction, and ergonomics are included in quality improvement activities. Summarize principal improvement goals and methods for each factor relevant and important to the company's work environment. For accidents and work-related health problems, describe how underlying causes are determined and how adverse conditions are prevented.
- **b.** mobility, flexibility, and retraining in job assignments to support employee development and/or to accommodate changes in technology, improved productivity, or changes in work processes
- **c.** special services, facilities and opportunities the company makes available to employees. These might include one or more of the following: counseling, assistance, recreational or cultural, and non-work-related education.
- **d.** how employee satisfaction is determined and interpreted for use in quality improvement
- **e.** trends and levels in key indicators of well-being and morale such as safety, absenteeism, turnover, attrition rate for customer-contact personnel, satisfaction, grievances, strikes, and worker compensation. Explain important adverse results, if any, and how problems were resolved or current status. Compare the current levels of the most significant indicators with those of industry averages and industry leaders.

5.0 Quality Assurance of Products and Services *(140 pts.)*

The ***Quality Assurance of Products and Services*** category examines the systematic approaches used by the company for assuring quality of goods and services based primarily upon process design and control, including control of procured materials, parts, and services. Also examined is the integration of process control with continuous quality improvement.

5.1 Design and Introduction of Quality Products and Services *(35 pts.)*

Describe how new and/or improved products and services are designed and introduced and how processes are designed to meet key product and service quality requirements.

AREAS TO ADDRESS

- **a.** how designs of products, services, and processes are developed so that: (1) customer requirements are translated into design requirements; (2) all quality requirements are addressed early in the overall design process by all appropriate company units; (3) designs are coordinated and integrated to include all phases of production and delivery; and (4) a process control plan is developed that involves selecting and setting key process characteristics for production and delivery of products and services and how these characteristics are to be measured and controlled
- **b.** how designs are reviewed and validated taking into account key factors: (1) product and service performance; (2) process capability and future requirements; and (3) supplier capability and future requirements
- **c.** how the company evaluates and improves the effectiveness of its designs and design processes and how it shortens the design-to-introduction cycle

Notes:

(1) Design and introduction may include modification and variants of existing products and services and/or new products and services emerging from research and development.

(2) Service and manufacturing businesses should interpret product and service requirements to include all product- and service-related requirements at all stages of production, delivery, and use. See also Item 7.1, Note (3).

(3) Depending on their type of business, applicants need to consider many factors in product and service design such as health, safety, long-term performance, measurement capability, process capability, maintainability, and supplier capability. Applicant responses should reflect the key requirements of the products and services they deliver.

5.2 Process Quality Control (20 pts.)

Describe how the processes used to produce the company's products and services are controlled.

AREAS TO ADDRESS

a. how the company assures that processes are controlled within limits set in process design. Include information on: (1) types and frequencies of measurements; and (2) what is measured, such as process, product, and service characteristics.

b. for out-of-control occurrences, describe: (1) how root causes are determined; (2) how corrections are made so that future occurrences are prevented; and (3) how corrections are verified

c. how the company evaluates the quality of the measurements used in process quality control and assures measurement quality control

Notes:

(1) For manufacturing and service companies with measurement requirements, it is necessary to demonstrate that measurement accuracy and precision meet process, service, and product requirements (measurement quality assurance). For physical, chemical, and engineering measurements, indicate approaches for ensuring that measurements are traceable to national standards through calibrations, reference materials, or other means.

(2) Verification of corrections and verification of improvements in 5.2b, 5.3c, and 5.4b should include comparison with expected or predicted results.

5.3 Continuous Improvement of Processes (20 pts.)

Describe how processes used to produce products and services are continuously improved.

AREAS TO ADDRESS

a. principal types of data and information the company uses to determine needs and opportunities for improvement in processes: (1) data from day-to-day process control; (2) field data such as customer data, data on product and service performance, and data on competitors' performance; (3) evaluation of all process steps; (4) process benchmark data; and (5) data of other types such as from process research and development and evaluation of new technology or alternative processes

b. how the company evaluates potential changes in processes to select from among alternatives

c. how the company integrates process improvement with day-to-day process quality control: (1) resetting process characteristics; (2) verification of improvements; and (3) ensuring effective use by all appropriate company units

Note: *The focus of this Item is on improvement of the primary processes used to produce the company's products and services, not on maintaining them or on correcting out-of-control occurrences, which is the focus of Item 5.2.*

5.4 Quality Assessment (15 pts.)

Describe how the company assesses the quality of its systems, processes, practices, products, and services.

AREAS TO ADDRESS

a. approaches the company uses to assess the quality of its systems, processes, practices, products, and services such as process reviews or audits. Include the types and frequencies of assessments, what is assessed, who conducts the assessments, and how the validity of assessment tools is assured.

b. how assessment findings are used to improve systems, processes, practices, training, or supplier requirements. Include how the company verifies that improvements are effective.

5.5 Documentation *(10 pts.)*

Describe documentation and other modes of knowledge preservation and knowledge transfer to support quality assurance, quality assessment, and quality improvement.

AREAS TO ADDRESS

- a. (1) principal quality-related purposes of documents such as for recording procedures and practices and for retaining key records; and (2) uses of documents such as in standardization, orientation of new employees, training, maintaining records for legal purposes, or for quality-related tracking of products, processes, and services
- b. how the company improves its documentation system: (1) to simplify and harmonize documents; (2) to keep pace with changes in practice, technology, and systems; (3) to ensure rapid access wherever needed; and (4) to dispose of obsolete documents

Note: *Documents may be written or computerized.*

5.6 Business Process and Support Service Quality *(20 pts.)*

Summarize process quality, quality assessment, and quality improvement activities for business processes and support services.

AREAS TO ADDRESS

- a. summary of process quality control and quality assessment activities for key business processes and support services: (1) how principal process quality requirements are set using customer requirements or the requirements of other company units served ("internal customers"); (2) how and how often process quality is measured; and (3) types and frequencies of quality assessments and who conducts them
- b. summary of quality improvement activities for key business processes and support services: (1) principal quality improvement goals and how they are set; (2) principal process evaluation and improvement activities, including how processes are simplified and response time shortened; (3) principal indicators used to measure quality; and (4) how and how often progress is reviewed

Notes:

(1) Business processes and support services might include activities and operations involving finance and accounting, software services, sales, marketing, information services, purchasing, personnel, legal services, plant and facilities management, research and development, and secretarial and other administrative services.

(2) The purpose of this Item is to permit applicants to highlight separately the quality assurance, quality assessment, and quality improvement activities for functions that support the primary processes through which products and services are produced and delivered. Together, Items 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, and 5.7 should cover all operations, processes, and activities of all work units. However, the selection of support services and business processes for inclusion in Item 5.6 depends on the type of business and quality system and should be made by the applicant.

5.7 Supplier Quality *(20 pts.)*

Describe how the quality of materials, components, and services furnished by other businesses is assured, assessed, and improved.

AREAS TO ADDRESS

- a. approaches used to define and communicate the company's specific quality requirements to suppliers. Include: (1) the principal quality requirements for the company's most important suppliers; and (2) the principal quality indicators the company uses to communicate and monitor supplier quality.
- b. methods used to assure that the company's quality requirements are met by suppliers. Methods may include audits, process reviews, receiving inspection, certification, and testing.
- c. strategy and current actions to improve the quality and responsiveness of suppliers. These may include partnerships, training, incentives and recognition, and supplier selection.

Note: *The term "supplier" as used here refers to other company providers of goods and services. The use of these goods and services may occur at any stage in the production, delivery, and use of the company's products and services. Thus, suppliers include businesses such as distributors, dealers, and franchises as well as those that provide materials and components.*

6.0 Quality Results

The ***Quality Results*** category examines quality levels and quality improvement based upon objective measures derived from analysis of customer requirements and expectations and from analysis of business operations. Also examined are current quality levels in relation to those of competing firms.

6.1 Product and Service Quality Results *(90 pts.)*

Summarize trends in quality improvement and current quality levels for key product and service features; compare the company's current quality levels with those of competitors and world leaders.

AREAS TO ADDRESS

a. trends and current levels for all key measures of product and service quality

b. current quality level comparisons with principal competitors in the company's key markets, industry averages, industry leaders, and world leaders. Briefly explain bases for comparison such as: (1) independent surveys, studies, or laboratory testing; (2) benchmarks; and (3) company evaluations and testing. Describe how objectivity and validity of comparisons are assured.

Notes:

(1) Key product and service measures are measures relative to the set of all important features of the company's products and services. These measures, taken together, best represent the most important factors that predict customer satisfaction and quality in customer use. Examples include measures of accuracy, reliability, timeliness, performance, behavior, delivery, after-sales services, documentation, and appearance. These measures are "internal" measures. Customer satisfaction or other customer data should not be included in responses to this Item.

(2) Results reported in Item 6.1 should reflect the key product and service features determined in Item 7.1, and be fully consistent with the key quality requirements for products and services described in the Overview (see page 36).

6.2 Business Process, Operational, and Support Service Quality Results *(50 pts.)*

Summarize trends in quality improvement and current quality levels for business processes, operations, and support services.

AREAS TO ADDRESS

a. trends and current levels for the most important measures of the quality and effectiveness of business processes, operations, and support services

b. comparison with industry averages, industry leaders, and world leaders

Notes:

(1) Key measures for business processes, operations, and support services are the set of principal measurable characteristics that represent quality and effectiveness in company operations in meeting requirements of customers and of other company units. Examples include measures of accuracy, timeliness, and effectiveness. Measures include error rates, defect rates, lead times, cycle times, and use of manpower, materials, energy, and capital as reflected in indicators such as repeat services, utilization rates, and waste.

(2) The results reported in Item 6.2 derive from quality improvement activities described in Category 5 and Item 1.4, if appropriate. Responses should reflect relevance to the company's principal quality objectives and should also demonstrate the breadth of improvement results throughout all operations and work units.

6.3 Supplier Quality Results *(40 pts.)*

Summarize trends and levels in quality of suppliers and services furnished by other companies; compare the company's supplier quality with that of competitors and with key benchmarks.

AREAS TO ADDRESS

a. trends and current levels for the most important indicators of supplier quality

b. comparison of the company's supplier quality with that of competitors and/or with benchmarks. Such comparisons could include industry averages, industry leaders, world leaders, principal competitors in the company's key markets, and appropriate benchmarks. Describe the basis for comparisons.

Note: *The results reported in Item 6.3 derive from quality improvement activities described in Item 5.7. Results should be broken down by major groupings of suppliers and reported using the principal quality indicators described in Item 5.7.*

7.0 Customer Satisfaction

The **Customer Satisfaction** category examines the company's knowledge of the customer, overall customer service systems, responsiveness, and its ability to meet requirements and expectations. Also examined are current levels and trends in customer satisfaction.

7.1 Determining Customer Requirements and Expectations *(30 pts.)*

Describe how the company determines current and future customer requirements and expectations.

AREAS TO ADDRESS

a. how the company determines current and future requirements and expectations of customers. Include information on: (1) how market segments and customer groups are determined and how customers of competitors and other potential customers are considered; (2) the process for collecting information and data. This should include what information is sought, frequencies of surveys, interviews or other contacts, and how objectivity is assured; and (3) how other information and data are cross-compared to support determination of customer requirements and expectations. Such information and data might include performance information on the company's products and services, complaints, gains and losses of customers, customer satisfaction, and competitors' performance.

b. process for determining product and service features and the relative importance of these features to customers and/or customer groups

c. how the company evaluates and improves its processes for determining customer requirements and expectations as well as the key product and service features

Notes:

(1) Products and services may be sold to end users by intermediaries such as retail stores or dealers. Thus, determining customer groups should take into account both the end users and the intermediaries.

(2) Product and service features refer to all important characteristics of products and services experienced by the customers throughout the overall purchase and ownership experiences. This includes any factors that bear upon customer preference or customer view of quality — for example, those features that enhance them or differentiate them from competing offerings.

(3) An applicant may choose to describe its offerings, part of its offerings, or certain of its activities as products or services irrespective of the SIC classification of the company. Such descriptions should then be consistent throughout the Application Report.

7.2 Customer Relationship Management *(50 pts.)*

Describe how the company provides effective management of its relationships with its customers and uses information gained from customers to improve products and services as well as its customer relationship management practices.

AREAS TO ADDRESS

- **a.** means for ensuring easy access for customers to seek assistance and to comment. Describe types of contact, such as telephone, personal, and written, and how the company maintains easy access for each type of contact.
- **b.** follow-up with customers on products and services to determine satisfaction with recent transactions and to seek data and information for improvement
- **c.** how the following are addressed for customer-contact personnel: (1) selection factors for customer-contact jobs; (2) career path; (3) special training to include: knowledge of products and services, listening to customers, soliciting comment from customers, how to anticipate and handle special problems or failures, and skills in customer retention; (4) empowerment and decision making; (5) attitude and morale determination; (6) recognition and reward; and (7) attrition
- **d.** how the company provides technology and logistics support for customer-contact personnel to enable them to provide reliable and responsive services
- **e.** how the company analyzes key customer-related data and information to assess costs and market consequences for policy development, planning, and resource allocation
- **f.** principal factors the company uses to evaluate its customer relationship management, such as response accuracy, timeliness, and customer satisfaction with contacts. Describe how the factors or indicators are used to improve training, technology, or customer-oriented management practices.

Notes:

(1) Other key aspects of customer relationship management are addressed in Items 7.3, 7.4, and 7.5.

(2) Item 7.2c addresses important human resource management requirements specifically for customer-contact personnel. This is included in Item 7.2 for special emphasis and coherence.

7.3 Customer Service Standards *(20 pts.)*

Describe the company's standards governing the direct contact between its employees and customers and how these standards are set and modified.

AREAS TO ADDRESS

- **a.** how well-defined service standards to meet customer requirements are set. List and briefly describe the company's most important customer service standards.
- **b.** how standards requirements and key standards information are deployed to company units that support customer-contact personnel. Briefly describe how the company ensures that the support provided by these company units is effective and timely.
- **c.** how service standards are tracked, evaluated, and improved. Describe the role of customer-contact personnel in evaluating and improving standards.

Note: *Service standards are objectively measurable levels of performance that define quality for the overall service or for a part of a service. Examples include measures of response time, problem resolution time, accuracy, and completeness.*

7.4 Commitment to Customers *(15 pts.)*

Describe the company's commitments to customers on its explicit and implicit promises underlying its products and services.

AREAS TO ADDRESS

a. types of commitments the company makes to promote trust and confidence in its products, services, and relationships. Include how the company ensures that these commitments: (1) address the principal concerns of customers; (2) are free from conditions that might weaken customer confidence; and (3) are understandable.

b. how improvements in the quality of the company's products and services over the past three years have been translated into stronger commitments. Compare commitments with those of competing companies.

Note: *Commitments may include product and service guarantees, product warranties, and other understandings with the customer, expressed or implied.*

7.5 Complaint Resolution for Quality Improvement *(25 pts.)*

Describe how the company handles complaints, resolves them, and uses complaint information for quality improvement and for prevention of recurrence of problems.

AREAS TO ADDRESS

a. how the company ensures that formal and informal complaints and feedback given to different company units are aggregated for overall evaluation and use wherever appropriate throughout the company

b. how the company ensures that complaints are resolved promptly and effectively. Include: (1) trends and levels in indicators of response time; and (2) trends in percent of complaints resolved on first contact with customer-contact personnel.

c. how complaints are analyzed to determine underlying causes and how the findings are translated into improvements. This translation may lead to improvements such as in processes, service standards, training of customer-contact personnel, and information to customers to help them make more effective use of products and/or services.

d. key indicators and methods the company uses to evaluate and improve its complaint-related processes. Describe how indicators and methods address effectiveness, response time improvement, and translation of findings into improvements.

Notes:

(1) A major purpose of aggregation of complaint information is to ensure overall evaluation for policy development, planning, training, and resource allocation. However, this does not imply that complaint resolution and quality improvement should await aggregation or that resolution and improvement are necessarily centralized within a company.

(2) Trends and current levels in complaints are requested in Item 7.7.

7.6 Determining Customer Satisfaction *(20 pts.)*

Describe the company's methods for determining customer satisfaction, how satisfaction information is used in quality improvement, and how methods for determining customer satisfaction are improved.

AREAS TO ADDRESS

a. how the company determines customer satisfaction for customer groups. Address: (1) brief description of market segments and customer groups; and (2) the process for determining customer satisfaction for customer groups. Include what information is sought, frequency of surveys, interviews or other contacts, and how objectivity is assured. Describe how the company sets the customer satisfaction measurement scale to adequately capture key information that accurately reflects customer preference.

b. how customer satisfaction relative to competitors is determined

c. how customer satisfaction data are analyzed and compared with other customer satisfaction indicators such as complaints and gains and losses of customers. Describe how such comparisons are used to improve customer satisfaction determination.

d. how the company evaluates and improves its overall methods and measurement scales used in determining customer satisfaction and customer satisfaction relative to competitors

Notes:

(1) Information sought in determining customer satisfaction may include specific product and service features and the relative importance of these features to customers, thus supplementing information sought in determining customer requirements and expectations.

(2) The customer satisfaction measurement scale may include both numerical designators and the descriptors assigned to them. An effective scale is one that provides the company with accurate information about specific product and service features and about the customers' likely market behaviors.

7.7 Customer Satisfaction Results *(70 pts.)*

Summarize trends in the company's customer satisfaction and in indicators of adverse customer response.

AREAS TO ADDRESS

a. trends and current levels in indicators of customer satisfaction for products and services. Segment these results by customer groups, as appropriate.

b. trends and current levels in major adverse indicators. Adverse indicators include complaints, claims, refunds, recalls, returns, repeat services, litigation, replacements, downgrades, repairs, warranty costs, and warranty work. If the company has received any sanctions under regulation or contract over the past three years, include such information in this Item. Briefly describe how sanctions were resolved or current status.

7.8 Customer Satisfaction Comparison *(70 pts.)*

Compare the company's customer satisfaction results and recognition with those of competitors that provide similar products and services.

AREAS TO ADDRESS

a. comparison of customer satisfaction results. Such comparisons should be made with principal competitors in the company's key markets, industry averages, industry leaders, and world leaders.

b. surveys, competitive awards, recognition, and ratings by independent organizations, including customers. Briefly describe surveys, awards, recognition, and ratings. Include how quality and quality attributes are considered as factors in the evaluations of these independent organizations.

c. trends in gaining or losing customers and in customer and customer account retention. Briefly summarize gains and losses of customers, including those gained from or lost to competitors. Address customer groups or market segments, as appropriate.

d. trends in gaining and losing market share relative to major competitors, domestic and foreign. Briefly explain significant changes in terms of quality comparisons and quality trends.

SCORING SYSTEM

The system for scoring Examination Items is based upon three evaluation dimensions: (1) approach; (2) deployment; and (3) results. All Examination Items require applicants to furnish information relating to one or more of these dimensions. Specific criteria associated with the evaluation dimensions are described below. Scoring Guidelines are outlined on page 21.

Approach

"Approach" refers to the methods the company uses to achieve the purposes addressed in the Examination Items. The scoring criteria used to evaluate approaches include one or more of the following:

- the degree to which the approach is prevention-based
- the appropriateness of the tools, techniques, and methods to the requirements
- the effectiveness of the use of tools, techniques, and methods
- the degree to which the approach is systematic, integrated, and consistently applied
- the degree to which the approach embodies effective evaluation/improvement cycles
- the degree to which the approach is based upon quantitative information that is objective and reliable
- the indicators of unique and innovative approaches, including significant and effective new adaptations of tools and techniques used in other applications or types of businesses

Deployment

"Deployment" refers to the extent to which the approaches are applied to all relevant areas and activities addressed and implied in the Examination Items. The scoring criteria used to evaluate deployment include one or more of the following:

- the appropriate and effective application to all product and service characteristics
- the appropriate and effective application to all transactions and interactions with customers, suppliers of goods and services, and the public
- the appropriate and effective application to all internal processes, activities, facilities, and employees.

Results

"Results" refers to outcomes and effects in achieving the purposes addressed and implied in the Examination Items. The scoring criteria used to evaluate results include one or more of the following:

- the quality levels demonstrated
- the contributions of the outcomes and effects to quality improvement
- the rate of quality improvement
- the breadth of quality improvement
- the demonstration of sustained improvement
- the significance of improvements to the company's business
- the comparison with industry and world leaders
- the company's ability to show that improvements derive from their quality practices and actions

Types of Information Requested

The 1991 Award Examination (pages 6-19) requests the following types of information:

Information Describing Approach and Deployment

- Category 1.0: Items 1.1, 1.2, 1.3, and 1.4
- Category 2.0: Items 2.1, 2.2, and 2.3
- Category 3.0: Items 3.1 and 3.2
- Category 4.0: Items 4.1, 4.2, 4.3, 4.4, and 4.5
- Category 5.0: Items 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, and 5.7
- Category 7.0: Items 7.1, 7.2, 7.3, 7.4, 7.5, and 7.6

Note: *Several Areas within these Items require data. These are 4.2d, 4.3b, 4.4b, 4.5e. In addition, Area 3.2d calls for projection of data. Any other Item/Area may be supported by data, provided that these data directly address the approach and deployment requirements outlined in the Item. (See the Guidelines and Recommendations section, pages 37-38.)*

Summary of Quality Improvement Results and Customer-Related Results

- Category 6.0: Items 6.1, 6.2, and 6.3
- Category 7.0: Items 7.5b, 7.7, and 7.8

Notes:

(1) These Items/Areas require data. Area 7.8b should be supported by data if data are available.

(2) Area 7.5b requests information on approach/deployment and on results.

SCORING GUIDELINES

SCORE	APPROACH	DEPLOYMENT	RESULTS
0%	■ anecdotal, no system evident	■ anecdotal	■ anecdotal
10-40%	■ beginnings of systematic prevention basis	■ some to many major areas of business	■ some positive trends in the areas deployed
50%	■ sound, systematic prevention basis that includes evaluation/improvement cycles ■ some evidence of integration	■ most major areas of business ■ some support areas	■ positive trends in most major areas ■ some evidence that results are caused by approach
60-90%	■ sound, systematic prevention basis with evidence of refinement through evaluation/improvement cycles ■ good integration	■ major areas of business ■ from some to many support areas	■ good to excellent in major areas ■ positive trends — from some to many support areas ■ evidence that results are caused by approach
100%	■ sound, systematic prevention basis refined through evaluation/improvement cycles ■ excellent integration	■ major areas and support areas ■ all operations	■ excellent (world-class) results in major areas ■ good to excellent in support areas ■ sustained results ■ results clearly caused by approach

BUSINESS FACTORS CONSIDERED IN THE EVALUATION OF APPLICATIONS

The Award Examination is designed to permit evaluation of the widest range of quality systems for manufacturing and service companies of any size, type of business, or scope of market. The 32 Items and 99 Areas to Address have been selected because of their importance to virtually all businesses. Nevertheless, the importance of the Items and Areas to Address may not be equally applicable to all businesses, even to businesses of comparable size in the same industry. Specific business factors that may bear upon the evaluation are considered at every stage of preparation for evaluations as well as in the evaluations themselves. Below is an outline of the key business factors and how they are considered in the Award Examination.

Key Business Factors

- size and resources of the applicant
- number and types of employees
- nature of the applicant's business: products, services, and technologies
- special requirements of customers or markets
- scope of the applicant's market: local, regional, national, or international
- regulatory environment within which the applicant operates
- importance of suppliers, dealers, and other external businesses to the applicant and the degree of influence the applicant has over its suppliers

How Business Factors are Considered in the Award Examination

- Appointments to the Board of Examiners are made to create a Board with a range of expertise, covering both manufacturing and service businesses. (For a description of the composition, structure, and operation of the Board of Examiners, see pages 24 and 25.)
- All Board members take part in a preparation course that includes instructions on how key business factors should be taken into account in evaluations. The preparation course includes study materials on manufacturing and service companies.
- Assignments of Board members to applications are made to provide the best matches between Examiners' experience and the businesses of the applicants.
- Applicants provide information on the key factors that affect their businesses in Overviews reviewed by all Board members assigned to the applications.
- Applicants do not lose credit in evaluations if some Areas to Address do not pertain to their businesses or quality systems and if valid rationales are provided.
- All applications receive multiple evaluations. The Panel of Judges considers all scores, scoring profiles, and details of strengths and areas for improvement at all stages of their review. The timeline and review process for 1991 applications are given on pages 24and 25.
- Wide margins of safety are built into decisions made by the Panel of Judges at three key stages: (1) after the first-stage review; (2) after the consensus review; and (3) after initial review of site visit reports. The judging procedures ensure that applicants are not eliminated based upon small differences in scoring.
- Judges' decisions at every stage are made on a category-by-category (Manufacturing, Service, and Small Business) basis. This ensures that comparisons take place among applicants in similar businesses.

Below is a summary by Examination Category of how key business factors are taken into account in evaluation.

Leadership

This Category examines the senior executives' leadership in creating quality values, building the values into the way the company does business, and how the executives and the company project the quality values outside the company. Participation in activities such as those of national and international organizations mentioned in this Category depends upon the type and resources of the business and its overall competitive and regulatory environments. Evaluations are based upon the appropriateness, effectiveness, and extent of the executives' and of the company's involvement in relation to the size and type of business. Whether or not the company has a quality department or officer or regulatory affairs office or officer is not considered in the evaluation.

Information and Analysis

This Category examines the scope, validity, and use of data to determine the adequacy of the data system to support total quality management. The scope, management, and analysis of data depend upon the type of business, its resources, number and geographical distribution of business units, and other factors. Also examined is the adequacy of the data, information, and analysis to support responsive, prevention-based approaches to quality improvement and customer satisfaction built upon "management by fact." Evaluations are based upon the appropriateness and effectiveness of methods for management of data, information, and analysis and of technology in relation to these business factors. Evaluations do not depend upon how activities are organized or whether or not the company has an information department or officer or uses particular technologies to analyze data or to make data available throughout the company.

Strategic Quality Planning

This Category examines the company's approach to planning to determine its adequacy to achieve or sustain quality leadership. While the planning processes and priority development do not depend appreciably upon the size and type of business, the scope and type of benchmark and competitive data may depend upon such business factors. Competitive and benchmark data are essential for planning quality leadership because they make possible clear and objective quality comparisons. The principal considerations in assessing the effectiveness of competitive and benchmark data are in relation to the competitive environment and resources of the company. However, if a company operates in a local or regional market, and there are other, non-competing companies in similar markets elsewhere, the company would be expected to reach beyond its local or regional market for competitive and benchmark data on key product, process, and service features.

Evaluations of planning are based upon the thoroughness and effectiveness of processes including the information used. Evaluations do not depend upon how planning activities are organized or whether or not the company has a planning department or officer.

Human Resource Utilization

This Category examines the company's efforts to develop and involve the entire work force in quality. The organization of efforts to develop and involve employees depends upon the number of employees, resources of the company, the geographical distribution of business units, and other factors. Evaluations depend upon the appropriateness and effectiveness of approaches to human resource development. They do not depend upon whether or not the company has either a human resource department or officer or training and education specialists or facilities. For example, education and training might be accomplished in a variety of ways, such as through schools, contract, or through training given by customers.

Quality Assurance of Products and Services

This Category has a very strong process and systems orientation throughout. Processes may be carried out either entirely by employees or largely by means of technology — or through a combination of the two. The degree of formality in systems and processes depends upon a number of factors, such as size of the business, types of products and services, customer and government requirements, regulatory requirements and number of business locations. Evaluations take into account consistency of execution of quality operations that incorporate a sound prevention basis and continuous quality improvement. Consistency of execution means the existence of defined, suitably-recorded processes with clear delineation of responsibilities. Evaluations do not depend upon how responsibilities are distributed or organized or whether or not the company has a quality organization or officer. Moreover, in small businesses, one person might carry out two or more functions.

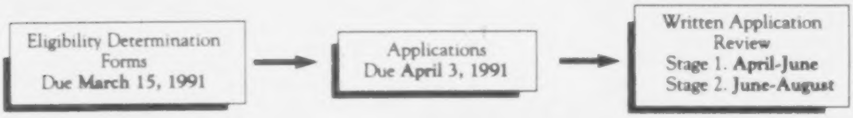
Quality Results

This Category examines the company's quality improvement and quality levels by themselves and in relation to those of competitors. Included are quality of products and services, internal operations, and suppliers. The number and type of measures depend upon factors such as the company's size, types of products and services, and competitive environment. Evaluations consider whether or not the measures are sufficient to support overall improvement and to establish clear quality levels and comparisons.

Customer Satisfaction

This Category examines the company's knowledge of customer requirements, service and responsiveness, and satisfaction results measured through a variety of indicators. The scope and organization of activities to gather information, to serve, and to respond to customers depend upon many factors, such as company resources, types of products and services, and geographical distribution of business units and customers. Evaluations are based upon the appropriateness and effectiveness of efforts in relation to these business factors. They also take into account whether or not a company utilizes all means at its disposal or within its resources to meet the key requirements of an excellent customer service system. Evaluations do not depend upon how responsibilities are distributed or whether or not the company has separate departments for customer service, complaints, or other special purposes.

TIMELINE AND REVIEW PROCESS FOR 1991 APPLICATIONS



Eligibility Determination

Applicants must submit the Eligibility Determination Form (on pages 29-30) prior to submitting an application. Within 14 days of receipt of the Eligibility Determination Form, applicants will be notified of their eligibility status. **The Eligibility Determination Form submission must be postmarked or consigned to an overnight mail delivery service by March 15, 1991, to be considered for the 1991 Award.**

Application

As part of the Program's continuous improvement process, changes in the Award are made each year. Consequently, only the 1991 Examination and associated forms may be used. Application review fees will be refunded if the application submitted is incomplete (e.g., it would not be possible to prepare a meaningful Feedback Report). **Applications must be postmarked or consigned to an overnight mail delivery service by April 3, 1991, to be eligible for the 1991 Awards.**

Application Review Process

Applications are reviewed by the Board of Examiners in a four-stage process:

1. **First-Stage Review:**
   A review of the Application Report is conducted by at least four members of the Board of Examiners. At the conclusion of the first-stage review, the Panel of Judges determines which applications should be referred for consensus review.

2. **Consensus Review:**
   A review of the Application Report is conducted by at least four members of the Board of Examiners and led by a Senior Examiner. At the conclusion of the consensus review, the Panel of Judges determines which applicants should receive site visits.

   Note: *A wide margin of safety is built into the decisions made at the conclusion of the first-stage review and at the conclusion of the consensus review to ensure that all applicants receive every reasonable consideration to advance to the next stage. The Judges consider applications case by case and review scoring and scoring profiles. Each Award Category — Manufacturing, Service, and Small Business — is considered separately. Strict conflict of interest rules apply and are carefully monitored at all four stages of review.*

FEES

Eligibility Determination Fees

The eligibility determination fee is $50 for all potential applicants. This fee is non-refundable.

Written Application Review Fees

- Manufacturing Company Category – $3000
- Service Company Category – $3000
- Small-Business Category – $1000
- Supplemental Sections – $1500
  (See page 37 for details on when it is necessary to submit Supplemental Sections.)

These fees cover all handling costs associated with distribution of applications and compensation of Examiners for application review and development of Feedback Reports.

Note: *The written application review fees for applicants in the Manufacturing and Service categories has been increased from $2500 to $3000 and for Supplemental Sections from $1200 to $1500.*

Site Visit Review Fees

Site visit fees will be set when the visits are scheduled. Fees depend upon the number of sites to be visited, the number of Examiners assigned, and the duration of the visit. Site visit fees for applicants in the small-business category will be charged at one-half of the rate for companies in the manufacturing and service categories.

These fees cover application handling costs, travel costs, and compensation of Examiners for site visit participation and development of site visit reports. Site visit fees are paid only by those applicants reaching the site visit stage.

Site Visit Review
Service: **September 9-13**
Manufacturing: **September 16-20**
Small Business: **September 23-27**

→

Award Ceremony
October or November

→

Feedback Reports
Distributed
November-December

3. **Site Visit Review**
An on-site verification of the Application Report is conducted by at least five members of the Board of Examiners and led by a Senior Examiner. The site visit review team develops a report for the Panel of Judges.

Note: *The highest-scoring candidates for the Award undergo site visits by members of the Board of Examiners. The primary objectives of the site visits are to verify the information provided in the Application Report and to clarify issues and questions raised during review of the Report. A site visit plan is cooperatively developed by the applicant and the site visit team. A site visit agenda is provided to the company at least two weeks in advance of the visit. The site visit agenda includes, but is not limited to, a schedule of planned visits to the applicant's facilities and operating units, a list of corporate officials to be interviewed, an estimate of time requirements for the visits, and the names of Examiners scheduled to participate. Site visits consist primarily of the conduct of interviews by Examiner teams and their review of pertinent records and data. Applicants are asked to make introductory and concluding presentations. In order to facilitate site visit planning, the dates of the 1991 site visits have already been scheduled. The dates are based on the three eligibility categories. The dates are:*

- *Service – September 9-13, 1991*
- *Manufacturing – September 16-20, 1991*
- *Small Business – September 23-27, 1991*

4. **Judges' Final Review**
A final review of all evaluation reports is conducted by the Panel of Judges to recommend Award recipients. The Panel of Judges develops a set of recommendations made to the National Institute of Standards and Technology. The Institute presents the Judges' recommendations to the Secretary of Commerce for Award decisions.

Award Ceremony

In previous years, Awards were presented by the President of the United States in special ceremonies in Washington, D.C.

Feedback Reports

All applicants receive Feedback Reports at the close of the Award cycle.

Malcolm Baldrige National Quality Award Board of Examiners

Members of the Malcolm Baldrige National Quality Award Board of Examiners review and evaluate all applications. The Board comprises approximately 200 quality experts selected from business, professional and trade organizations, accrediting bodies, universities, and government. Selected each winter through an application process, Board of Examiner members meet the highest standards of qualification and peer recognition.

Board appointments are of three types: Examiners, Senior Examiners, and Judges. All members of the Board take part in an examination preparation course designed to ensure understanding, consistency, and fairness throughout the examination process. The course addresses the intent of the Examination Items, the application of the Scoring System, the preparation of Feedback Reports, and the details of the Examination process.

When assigning Board members to review applications, business and quality expertise are matched to the business of the applicant. Accordingly, applications from manufacturing companies are assigned primarily to Board members with manufacturing expertise, and service company applications are assigned primarily to those with service expertise.

Confidentiality
Board member assignments follow strict rules regarding real and potential conflict of interest. Board members sign agreements to abide by a Code of Ethics, which includes non-disclosure of information from applications.

ELIGIBILITY CATEGORIES AND RESTRICTIONS

Basic Eligibility

Public Law 100-107 establishes the three eligibility categories of the Award: Manufacturing, Service, and Small Business. Any for-profit business located in the United States or its territories may apply for the Award. Eligibility for the Award is intended to be as open as possible to all U.S. companies. Minor eligibility restrictions and conditions ensure fairness and consistency in definition. For example, publicly or privately owned, domestic or foreign-owned, joint ventures, incorporated firms, sole proprietorships, partnerships, and holding companies may apply. Not eligible are: local, state, and national government agencies; not-for-profit organizations; trade associations; and professional societies.

Award Eligibility Categories

1. **Manufacturing**
   Companies or subsidiaries (defined below) that produce and sell manufactured products or manufacturing processes and those companies that produce agricultural, mining, or construction products *(see SIC Codes 01-39 on page 42).*
2. **Service**
   Companies or subsidiaries that sell services *(see SIC Codes 40-89 on page 42).*
   - Proper SIC Classification of companies that perform both manufacturing and service is determined by the larger percentage of sales.
3. **Small Business**
   Complete businesses with not more than 500 full-time employees. Business activities may include manufacturing and/or service. A small business must be able to document that it functions independently of any equity owners.

Subsidiaries

For purposes of the Malcolm Baldrige National Quality Award application, a subsidiary will be taken to mean an actual subsidiary, business unit, division, or like organization. In the Manufacturing and Service categories, subsidiaries of a company may be eligible for the Award. Small businesses must apply as a whole; subsidiaries of small businesses are not eligible.

The following application conditions apply for subsidiaries:

- The subsidiary must have existed one year prior to the Award application.
- The subsidiary must have clear definition of organization as reflected in corporate literature, e.g., organization charts, administrative manuals, annual reports.
- The subsidiary must have more than 500 full-time employees, OR
- It must have 25% of all employees in the world-wide operations of the parent company. ("Parent company" refers to the company that owns or controls subsidiaries through the ownership of voting stock.)

Note: *The requirement for 25% of all employees is an increase from the 1990 requirement.*

Restrictions on Eligibility

The intent of Public Law 100-107 is to create an Award process incorporating rigorous and objective evaluation of the applicants' total quality systems underlying its products and services. *Award recipients are to serve as appropriate models of total quality achievement for other U.S. companies.* Customer satisfaction is to play a major role in the examination. Site visits are required to verify descriptions given in written applications.

The nature of some companies' activities are such that the central purposes and requirements of Public Law 100-107 cannot be fulfilled through their participation in the Award

Program; companies or subsidiaries whose businesses cannot fulfill these purposes are not eligible. Specifically, four restrictions apply:

1. A company or its subsidiary is eligible only if the quality practices associated with all major business functions of the applicant are inspectable in the United States or its territories. One or both of the following conditions must apply:
   - more than 50% of the applicant's employees must be located in the U.S. or its territories, or
   - more than 50% of the applicant's physical assets must be located in the U.S. or its territories

   Note: *The functions/activities of foreign sites must be included in the Application Report in the appropriate Examination Item.*
2. At least 50% of the subsidiary's customer base (dollar volume for products and services) must be free of direct financial and line organization control by the parent company. For example, a subsidiary is not eligible if its parent company or other subsidiary of the parent company is the customer for more than one-half of its total products and services.
3. Individual units or partial aggregations of units of "chain" organizations (such as hotels, retail stores, banks, or restaurants) are not eligible.

   For purposes of this application, a chain organization is defined as an organization where each unit (e.g., subsidiary or franchise) performs a similar function or manufactures a similar product. Accordingly, a potential applicant is not eligible if the parent company or another unit of the parent company provides similar products or services for substantially the same customer base. Similarly, an individual unit is not eligible if customers would be unable to distinguish easily which unit of the company provides the products or services to them.
4. Subsidiaries performing any of the business support functions of the company are not eligible. Examples of business support functions include: Sales/Marketing/Distribution, Customer Service, Finance and Accounting, Human Resources, Environmental-Health-Safety of Employees, Purchasing, Legal Services, and Research and Development.

   Note: *This exclusion of business support functions represents a change from the 1990 restrictions on eligibility.*

Multiple-Application Restrictions

1. A subsidiary and its parent company may not both apply for Awards in the same year.
2. Only one subsidiary of a company may apply for an Award in the same year in the same Award category.

Future Eligibility Restrictions

1. If a company receives an Award, the company and all its subsidiaries are ineligible to apply for another Award for a period of five years.
2. If a subsidiary receives an Award, it is ineligible to apply for another Award for a period of five years.
3. If a subsidiary consisting of more than one-half of the total sales of a company receives an Award, neither that company nor any of its other subsidiaries is eligible to apply for another Award for a period of five years.

Eligibility Determination

In order to ensure that potential Award recipients meet all reasonable requirements and expectations in representing the Award throughout the U.S., an eligibility determination step was introduced in 1990. Determination takes into account the following factors:

- size
- small business status
- subsidiary status and subsidiary functions performed
- customer base
- sales to a parent company or another unit of the parent company
- status as a U.S. company
- relationship of products and services to those of the parent company or other units of the parent company
- number and type of support services provided by the parent company or other units of the parent company

Potential applicants are encouraged to submit their Eligibility Determination Form (see pages 29-30) as early as possible.

1991 ELIGIBILITY DETERMINATION FORM – INSTRUCTIONS

General Instructions

A potential applicant should submit the 1991 Eligibility Determination Form only if the applicant intends to apply in 1991. Type or very clearly print all information requested. The 1991 Eligibility Determination Form may be duplicated. Attach an organization chart of the business. Send a letter of transmittal on company stationery along with the completed form and fee to:

Malcolm Baldrige National Quality Award
P.O. Box 443
Milwaukee, WI 53201-0443

Overnight Mailing Address:
c/o American Society for Quality Control
310 West Wisconsin Avenue
Suite 500
Milwaukee, WI 53203

Note: *Applicants must submit a copy of the approved Eligibility Determination Form with each copy of the Application Report submitted (see pages 36-38).*

Item Instructions

Item 1. Applicant
Provide the official name and mailing address of the organization applying for the Award. Check whether or not the applicant existed prior to April 3, 1990. If the answer is no, briefly explain.

Item 2. Highest-Ranking Official
Provide the name, title, mailing address, and telephone number of the applicant's highest-ranking official.

Item 3. For-Profit Designation
Check the appropriate box. Only for-profit organizations are eligible for a 1991 Award.

Item 4. Size of Applicant
Give the estimated number of employees of the applying unit as of the date the application will be submitted. State the approximate percent (to the nearest whole number) of employees of the applicant located in the United States or its territories. State the approximate percent (to the nearest whole number) of physical assets of the applicant located in the United States or its territories. This may be omitted if over 50% of the employees are located in the United States or its territories.

Item 5. Subsidiary Designation

(a) A broad interpretation of the word "subsidiary" is used for purposes of the Malcolm Baldrige National Quality Award. See page 26. Check the appropriate box.

(b) If the applying organization is a component of a company, then the name and address of the parent company and the name and title of the highest official of the parent company must be supplied. Provide the number of world-wide employees of the parent company including all its subsidiaries. Do not include joint ventures.

(c) Check the appropriate box.

(d) Marketplace confusion is a key factor in precluding eligibility for one of a set of similar units within companies, especially in the case of chain businesses. If yes is checked, provide a brief description of the product or service similarity and the organizational relationships of all units providing the same or similar products and services.

(e) Briefly describe the major business support functions provided to the applicant by the parent company or by other units of the parent company, if applicable.

(f) Check the appropriate box. If two or more subsidiaries from a parent company are planning to apply, provide a brief explanation. Only one can be accepted per category.

(g) Submit a *short* document such as an annual report or the appropriate page(s) from a company publication showing the organization of the parent company and its relationship to the applying unit. This publication must show the existence of the applying unit before April 3, 1990. Indicate the title of this document.

Item 6. Percent Customer Base
Check the appropriate box. If the answer is no, briefly describe these customers and their relationship to the applicant.

Item 7. Fee
A non-refundable fee of $50 must be included with the 1991 Eligibility Determination Form, documentation, and letter of transmittal.

Item 8. Official Inquiry Point
While reviewing the 1991 Eligibility Determination Form and associated materials, the Administrator may need to contact the applicant for additional information. Give the name, address, telephone and telefax numbers of the official inquiry person.

Item 9. Authorizing Official
The signature of the applicant's highest-ranking official or designee is required.

Item 10. Eligibility Determination
The Administrator will return your form to you with an official determination written in this box. Submit this Eligibility Determination Form as part of the application package.

1991 ELIGIBILITY DETERMINATION FORM – *Page 1 of 2*

Malcolm Baldrige National Quality Award

1 Applicant

Company Name ______________________________

Address ______________________________

____

Did the applicant officially or legally exist before April 3, 1980?
(Check one.) ___Yes ___No (briefly explain)

____

____

2 Highest-Ranking Official

Name ______________________________

Title ______________________________

Address ______________________________

____

Telephone No ______________________________

3 Is the applicant a for-profit business?

(Check one.) ___ Yes ___No

4 Size of Applicant

Total number of Employees ______________________________

Percent employees in the U.S. and/or territories ____________

Percent physical assets in U.S. and/or territories ____________

5 Subsidiary Designation (Check one.)

a. Is applicant a subsidiary, business unit, division, or like organization? ___Yes (continue) ___No (go to Item 6)

b. Parent Company

Address ______________________________

____

Highest Official ______________________________

Title ______________________________

Number of world-wide employees of parent company________

c. Does applicant comprise over 25% of the world-wide employees of the parent company? (Check one.)

___Yes ___No

d. Do other units within the parent company provide similar products or services? (Check one.)

___Yes (briefly explain) ___No

____

____

e. Briefly describe the major business support functions provided to the applicant by the parent company or unit of the parent company, if applicable.

This form may be copied and attached to, or bound with, other application materials.

1991 ELIGIBILITY DETERMINATION FORM – *Page 2 of 2*

Malcolm Baldrige National Quality Award

Subsidiary Designation (Continued)

f. Is the applicant's parent company or another subsidiary of the parent company intending to apply in 1991? (Check one.)

___Yes (briefly explain) ___No ___ Don't know

g. Name the document supporting the subsidiary designation.

Include a copy of the document with this application. See instructions on page 28 for limit on materials to be submitted.

Percent Customer Base

Is over 50% of the sales of the applicant to customers outside of the applicant's organization, its parent company, or other companies with financial or organizational control of the applicant or parent company? (Check one.)

___Yes ___No(briefly explain)

Fee

Enclosed is $50 to cover the eligibility determination. Make check or money order payable to:

The Malcolm Baldrige National Quality Award

Official Inquiry Point

Name

Title

Mailing Address

Overnight
Mailing Address

Telephone No.

Telefax No.

Signature, Authorizing Official

Date

X

Name

Title

Address

Telephone No.

Eligibility Determination

For Official Use Only

Note: *An approved Eligibility Determination Form must be submitted as part of the Application Package.*

1991 APPLICATION FORM – INSTRUCTIONS

General Instructions

Type or very clearly print all information requested. The Application Form may be duplicated and single-sided pages submitted. Applicants must submit a copy of the Application Form with each copy of the Application Report submitted.

Item Instructions

Item 1. Applicant
Provide the official name and mailing address of the organization applying for the Award.

Item 2. Highest-Ranking Official
Provide the name, title, mailing address, and telephone number of the applicant's highest-ranking official.

Item 3. Size of Applicant
Give the estimated number of employees of the applying unit as of the date the application is submitted.

Give the number of different sites of all units involved with the products or services sold by the applicant.

Separate sites need not be counted for offices or other work areas located near each other if the company considers them as one location for business and personnel purposes.

Circle the appropriate range for sales of the applicant for the preceding fiscal year. (The applicant is reminded that all information is confidential and that only a range is being requested to provide an appropriate perspective for the Examiners.)

Item 4. Subsidiary Designation
A broad interpretation of the word "subsidiary" is used for purposes of this Award. See page 26. Check the appropriate box.

If the applying organization is a component of a larger company, then information about the parent company and the highest official of the parent company must be supplied.

Item 5. Award Category
Based on eligibility discussed on pages 26 and 27 of the 1991 Application Guidelines, indicate which one of the three Award categories pertains.

Item 6. Industrial Classification
From page 42 choose up to three SIC codes that best describe the applicant's products and/or services.

Item 7. Description of Products or Services Sold
In the space provided, describe the types of products or services sold by the applicant.

Indicate the approximate percent each type represents of the applicant's total sales. It is not necessary to list individual products or services.

Item 8. Supplier and Dealer Networks
Summarize the number of suppliers of goods and services used by the applicant.

If the applicant relies on external sales organizations, indicate the approximate number of each type.

Item 9. Application Components
Indicate all forms and reports submitted as part of the total application.

Item 10. Official Inquiry Point
As the examination proceeds, the Administrator may need to contact the applicant for additional information.

Give the name, address and telephone number of the corporate official with authority to provide additional information or to arrange a site visit.

If this official contact point changes during the course of the application process, please inform the Administrator.

Item 11. Fees
Indicate fees due: $3000 for an Application Report for applicants in the Manufacturing category or the Service category, plus $1500 for each Supplemental Section; $1000 for an applicant in the Small Business category.

Payment must be submitted with the application.

Item 12. Release Statement
Please read this section carefully.

A signed application indicates that the applicant agrees to the terms and conditions stated there.

Item 13. Authorizing Official
The signature of the applicant's highest-ranking official or designee is required and indicates the applicant will comply with the terms and conditions stated in the document.

Note: *The 1991 Application Form does not include an abstract of the Application Report and Supplemental Sections.*

1991 APPLICATION FORM — *Page 1 of 2*

Malcolm Baldrige National Quality Award

1 Applicant

Company Name ____________________

Address ____________________

____

2 Highest-Ranking Official

Name ____________________

Title ____________________

Address ____________________

____

Telephone No. ____________________

3 Size of Applicant

Total Number of Employees ____________________

Total Number of Sites ____________________

Sales Preceding Fiscal Year *(circle one)*

0-$1M　$10M-$100M　$500M-$1B
$1M-$10M　$100M-$500M　Over $1B

4 Subsidiary Designation *(check one)*

☐ No (Go to Item 5)　☐ Yes (continue)

Parent Company ____________________

Address ____________________

____

Highest Official ____________________

Title ____________________

Does Applicant comprise over 50% of parent company?
(check one)

☐ No　☐ Yes

5 Award Category *(check one)*

☐ Manufacturing　☐ Service　☐ Small Business

6 Industrial Classification

List up to three most descriptive two-digit SIC Codes.
(See Page 42.)

__________　__________　__________

7 Description of Products or Services Sold

This form may be copied and attached to, or bound with, other application materials.

1991 APPLICATION FORM — *Page 2 of 2*

Malcolm Baldrige National Quality Award

Supplier and Dealer Networks

Number of Suppliers ______________________

Numbers of External Sales Organizations:

Dealers __________ Distributors __________

Franchises __________ Other (Type/Number) __________

Application Components

Eligibility Determination Form with confirmation __________ (check)

Number of Site Listing and Descriptors Forms
Submitted __________ (number)

Application Report only __________ (check)

Application Report and __________ (number) Supplemental Sections

10 Official Inquiry Point

Name ______________________

Title ______________________

Mailing Address ______________________

____

Overnight
Mailing Address ______________________

____

Telephone No. ______________________

Telefax No. ______________________

11 Fee *(see instructions)*

Enclosed is $__________ to cover one
Application Report and __________ Supplemental Sections

Make check or money order payable to:
The Malcolm Baldrige National Quality Award

12 Statement

We understand that this application will be reviewed by members of the Board of Examiners. Should our company be selected for one or more site visits, we agree to host the site visit(s) and to facilitate an open and unbiased examination. We understand that the company must pay reasonable costs associated with any site visit(s).

13 Signature, Authorizing Official

Date ______________________

X ______________________

Name ______________________

Title ______________________

Address ______________________

____

Telephone No. ______________________

1991 SITE LISTING AND DESCRIPTORS FORM – INSTRUCTIONS

Introduction

Because the Award focuses on the applicant's total quality system, it is important that the Examiners have a good understanding of the size, structure, and functions of the different corporate units. In addition, sufficient information must be provided on the products or services produced at each location to make a sound determination of the number of locations to be examined if the company is selected for a site visit. Applicants must submit a copy of the Site Listing and Descriptors Form with each copy of the Application Report submitted (see pages 36-38). Instructions for filling out the Site Listing and Descriptors Form follow.

Instructions

A. Address of Site

Provide the complete address of the site.

B. Relative Size

Provide the approximate percent of the applicant's employees at each site. Provide the approximate percent of the applicant's sales accounted for by the output of each site. Use not applicable (N/A) for percent sales of headquarters or similar offices, when appropriate.

C. Linkage to Written Report

Indicate which part of the Written Report addresses the Examination Items for each site. Check the Application Report column if that is where it is addressed, or write the *number* of the Supplemental Section in which the Items are addressed. (See page 37 for guidelines on how to determine whether Supplemental Sections are needed.)

D. Description of Products or Services

Describe the types of products or services that are the output of the site. It may be necessary to state the relationship between the output of the site and the applicant's final products and services. It is not necessary to list every product or service.

Notes:

(1) Summaries of Multiple Sites

In cases where the applicant has many sites performing the same function, these sites may be aggregated under one listing. Instead of the addresses for each, a summary statement about the locations may be made. If site visits are to be conducted, a more detailed listing will be requested when the visit is planned.

(2) Foreign Sites

If the applicant has foreign sites, these sites must be included in the Site Listing and Descriptors Form. The Application Report must address activities in foreign sites in the appropriate Examination Items. Applicants should be aware that no site visits will be scheduled for locations outside the United States or its territories.

Non-Disclosure

Names of applicants, individual applications, commentary, and scoring information developed during the review of applications are regarded as proprietary and are kept confidential. Such information is available only to those individuals directly involved in the evaluation and application distribution processes. Board of Examiner members are assigned to applications following strict conflict of interest rules and receive no information regarding the content or status of applications to which they are not assigned (see Board of Examiners, page 25). Information on successful strategies of Award recipients and other applicants *may be released only with written approval of the applicant.*

1991 SITE LISTING AND DESCRIPTORS FORM

A. Address of Site	B. Relative Size Percent of Applicant's		C. Linkage to Written Report		D. Description of Products or Services
	Employees	Sales	Application Report	Supplemental Section	

Provide all the information for each site except where multiple sites produce similar products or services. For such multiple site cases, see page 34.

This form may be copied and attached to, or bound with, other application materials.

1991 APPLICATION REPORT – INSTRUCTIONS

Objective

The objective of the Application Report is to allow applicants to provide information on quality management of products and services and on results of quality improvement processes to permit a rigorous evaluation to be performed by the Board of Examiners.

Purpose

The purpose of this section is to provide applicants with instructions for preparing the Application Report. These instructions include information on typing, page limits, organization, assembly, and other format considerations. Guidelines for responding to Examination Items are also given.

Requirements

Each applicant must submit an Application Report consisting of: (1) a brief Overview of the applicant's business; and (2) responses to the 32 Examination Items in the Award Examination. In addition, some applicants must submit one or more Supplemental Sections, as described on page 37.

Preparation of the Overview

The Overview is a two-page summary that describes significant business factors to be considered in the evaluation of an application. It is intended to "set the stage" for the Examiners.

Factors appropriate for inclusion in the Overview are:

- Types of major products and services
- Key quality requirements for products and services
- Nature of major markets (local, regional, national, or international)
- Description of principal customers (consumers, other businesses, government)
- Competitive environment
- Applicant's position in the industry
- Major equipment and facilities used
- Types of technology used
- General description of the applicant's employee base including: number, type, and education level
- Importance of suppliers, dealers, and distributors
- Occupational health and safety and other regulatory considerations
- Other factors important to the applicant

If the applicant is a subsidiary, a description of the organizational structure and management links to the parent company should be presented. A comparison to the parent company of the number of employees, of the sales volume, and of the products and services offered should be included. The Overview is not counted as part of the page limit.

Format for the Application Report

Typing Instructions
The Application Report should contain the same Category and Item numerical designations as in the Award Examination. A table of contents with the page number of each Category and Item should be provided. The Application Report must be typed on standard 8½ by 11-inch paper using a fixed pitch font of 12 or fewer characters per inch or a proportional spacing font of point size 10 or larger. Any type may be used. Helvetica and Times or equivalent type fonts are preferred. There should be the equivalent of two points of lead between lines. The number of lines per page should not exceed 60, including the page headings and page numbers. Pages set up in two-column format are preferred. Type on pages including pictures, graphs, figures, data tables, and appendices must also meet the requirements for size and spacing. Pages may be printed on both sides. The text of this paragraph is printed in 10 point Helvetica with 2 points of lead between lines.

Page Limits and Exclusions
For the Manufacturing category and the Service category, the Application Report is limited to a maximum of 75 single-sided pages including pictures, graphs, figures, data tables, and appendices. Supplemental Sections are limited to a maximum of 50 single-sided pages. For small business the Application Report is limited to 50 single-sided pages.

Though not required, the use of labeled section tabs and a glossary of terms and abbreviations would be appreciated. In all cases, two-page Overviews, dividers, covers, tab separators, glossaries, title pages, and tables of contents are not counted as part of the page limit.

The use of bulky binders or similar heavy covers is discouraged. Their use decreases the ease of handling in all phases of the evaluation process. Copies of video or audio tape or other information aids should not be submitted.

Organization of Responses to Examination Items
Responses to Examination Items should be organized as follows:

- Respond to each Examination Item as a whole. Address the set of Areas in an order and with an emphasis that reflects the applicant's business and quality system. However, to facilitate review by the Board of Examiners, applicants are encouraged to respond to the Areas in the order given in the Items.

- Applicants should denote responses to Areas with the letters a, b, c, etc., corresponding to each Area. Applicants should denote responses to Areas by underlining the Item/Area (e.g., 4.2d). If an Area does not pertain to the applicant's business or quality system, the applicant must provide a statement of one or two sentences explaining why the Area is not applicable. This statement should be given at the end of the overall response to the Item. The Item/Area designator should be used as described above.

Document Assembly

A complete Application Report should include the following components:

- Title Page
- 1991 Eligibility Determination Form
- 1991 Application Form
  Note: *The 1991 Application Form does not include an abstract of the Application Report and Supplemental Sections.*
- 1991 Site Listing and Descriptors Form(s)
- Table of Contents
- Overview
- Categories/Items/Areas (i.e., 1.1a through 7.8d)

All components of the Application Report should be securely fastened together to prevent separation during handling.

Use of Supplemental Sections

All applicants must prepare an Application Report addressing all of the Examination Items. In order to maintain an equivalent level of detail for all sizes and types of companies and subsidiaries, certain applicants may also need to provide Supplemental Sections. The use of Supplemental Sections is required when the applicant comprises units of a company that are in essentially different businesses. They are not necessary when similar products or services are produced or delivered by different divisions using similar quality systems. There is a $1500 fee for each Supplemental Section submitted. Below is an outline of the key factors and guidelines for Supplemental Sections.

- **Single or related product and service lines served by a single quality system**
  Only the Application Report is required if the applicant has a single quality system that supports all its product or service lines and if the products or services are essentially similar in terms of customers, technology, types of employees, planning, and quality.
- **Two or more diverse product or service lines and/or dissimilar quality systems**
  In such cases, the Application Report and one or more Supplemental Sections are required. The Application Report should encompass the largest aggregation of similar product or service lines, as described above, that are supported by a single quality system. Together, the Application Report and the Supplemental Sections must cover all products and/or services and all quality systems of the applicant.

A complete Supplemental Section should include the following components:

- Title Page
- 1991 Site Listings and Descriptors Form(s)
- Table of Contents
- Overview
- Categories/Items/Areas (i.e., 1.1a through 7.8d)

All components of the Supplemental Section should be securely fastened together to prevent separation during handling.

Guidelines and Recommendations for Responding to Examination Items

The guidelines and recommendations given below are offered to assist applicants in preparing responses to the Examination Items:

(1) Read the entire Application Guidelines, particularly the Examination Categories, Examination Items, Areas to Address, Notes, and Scoring System, before developing responses to any of the Examination Items.

(2) Note from the requirements in the Examination Items and from the Scoring System that applicants are requested to provide information on one or more of the following: approach, deployment, and results. However, some Items may request information only on approach/deployment and other Items only on results.

(3) Check related Items to determine the distinctions between the types and amounts of information required. Each Item is best interpreted by noting the purposes of its Category.

(4) Respond to Items with concise, factual statements. Support statements with quantitative information whenever appropriate. Use of charts, graphs, and tables, properly labeled and compactly presented, is strongly encouraged. Lengthy narratives not directly responsive to the requirements of items are discouraged. Also avoid reiteration of the words and phrases of Examination Items.

(5) Avoid the use of anecdotal information or information lacking overall context. An example is at times appropriate, but applicants should make clear that the example illustrates the larger point being made and is not itself the response to the Item.

(6) Report only what is requested in each Item, and include only the types of information requested. Make responses self-contained and not dependent upon information given in responses to other Items. However, if other Items contain information that directly supports a response, and at the same time avoids significant duplication of information, provide cross references using Item and Area designators as described on page 37.

(7) Some Areas to Address include the phrases "such as" or "may include" to illustrate the types of topics appropriate for applicants to discuss in response to Examination Items. Applicants should seek to provide a complete response, addressing those topics as well as similar topics of *relevance* and *importance*.

(8) Note which Items *require* data. These are: 4.2d; 4.3b; 4.4b; 4.5e; 6.1a,b; 6.2a,b; 6.3a,b; 7.5b; 7.7a,b; 7.8a,c,d. In addition, Item 3.2d calls for a projection of data. Other Items also may be supported by data. However, such data should be directly relevant and responsive to the Item requirements. For example, if Items requiring information on approach and/or deployment are to be supported by data, make certain that the data are part of the description of approach and deployment and do not address results that may derive from the approach and deployment. Such results data are requested in other Items.

(9) Trend data are requested to permit applicants to demonstrate progress and to show that improvements are sustained. No minimum period of time is specified for trend data. However, evaluations of trend data do take into account evidence of continuity. Time periods for trend data may span up to five years or more for some product, service, or operational characteristics, but may be much shorter in areas where improvement efforts have been established more recently.

(10) Trend data should be presented in graphical, tabular, or other compact form. Integrate charts, graphs, and tables into the body of the text whenever possible. Include appropriate benchmarks or other references that help to ensure the proper interpretation of data.

(11) The application of a subsidiary must respond to requirements given in all 32 Examination Items, even if some of the activities described are performed by the parent company or a unit of the parent company. Such activities are subject to evaluation, including review during site visits.

For additional information concerning the Award, contact the Award Office.

Malcolm Baldrige National Quality Award
National Institute of Standards and Technology
Route 270 and Quince Orchard Road
Administration Building, Room A537
Gaithersburg, MD 20899
Telephone: (301) 975-2036
Telefax: (301) 948-3716

Additional individual copies of the application material may be obtained from the Award Office. Bulk quantities are available from the American Society for Quality Control. Detailed bulk ordering information appears on page 42.

1991 APPLICATION PACKAGE CHECKLIST

In 1991, application for the Award is a two-step process.

Step One

Due March 15, 1991
(see page 24)

Submit Eligibility Determination Form and Fee
Complete the Eligibility Determination Form found on pages 29 and 30. Provide supporting documents described on page 28. Enclose a $50 non-refundable fee. Make check payable to: The Malcolm Baldrige National Quality Award. Send a letter of transmittal on company stationery along with the completed form, supporting documents, and fee to:

Malcolm Baldrige
National Quality Award
P.O. Box 443
Milwaukee, Wisconsin 53201-0443

Overnight mailing address:
c/o ASQC
310 W. Wisconsin Avenue
Suite 500
Milwaukee, Wisconsin 53203
(414) 272-8575

Step Two

Due April 3, 1991
(see page 24)

Submit Application Package and Fee
Send 15 copies of the complete application package along with fee payment to:

Malcolm Baldrige
National Quality Award
P.O. Box 443
Milwaukee, Wisconsin 53201-0443

Overnight mailing address:
c/o ASQC
310 W. Wisconsin Avenue
Suite 500
Milwaukee, Wisconsin 53203
(414) 272-8575

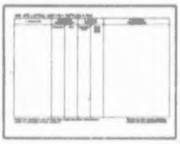
A complete application package for the 1991 Award contains two parts:

Part 1 – Three Forms

a. Approved Two-page Eligibility Determination Form
(see pages 29 and 30)

b. Two-page Application Form
(see pages 32 and 33)

c. Site Listing and Descriptors Form(s)
(see page 35)



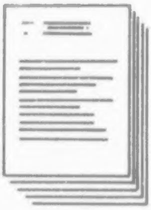
Part 2 – Written Report

a. Application Report (Required)

Two-page Overview *plus*

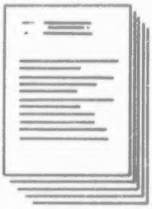
Up to 75 pages
- Manufacturing
- Service

Up to 50 pages
- Small Business



b. Supplemental Section(s) (Optional)

Up to 50 pages



1990 Award Recipients

"The winners of this award have made quality improvement a way of life. Quality is their bottom line, and that kind of can-do attitude makes for world-class products and services."

Robert Mosbacher
Secretary of Commerce

Cadillac Motor Car Company

During the 1980's, able foreign and domestic competitors gained market share at Cadillac's expense. By effectively integrating quality into all endeavors — from product planning to personnel practices — Cadillac has reversed its decline in market share, attracting new buyers while boasting the highest percentage of repeat buyers in the car industry. Its partnerships with the United Auto Workers have been a catalyst in this transformation. Cadillac employs about 10,000 people at its Detroit area headquarters, four Michigan-based manufacturing plants, and 10 sales and service zone offices in the United States.

Cadillac's turnaround began in 1985 with implementation of simultaneous engineering (SE), the first of several major changes designed to ensure that the division's products and services would be first to meet or exceed the expectations of potential buyers. More than 700 employees and supplier representatives now participate on SE teams responsible for defining, engineering, marketing, and continuously improving all Cadillac products. Alongside customers and employees, suppliers and dealers are fully integrated into Cadillac's customer-focused quality improvement efforts. Three-fourths of the division's 55 Product Development and Improvement Teams have suppliers as members. External suppliers must demonstrate continuous improvement in meeting "targets for excellence" in five key areas: quality, cost, delivery, technology, and management. Virtually all measures of performance indicate that continuous quality improvement is paying off for Cadillac.

IBM Rochester

The concept of quality at IBM Rochester is linked directly to the customer. Detailed features are crafted from analysis of needs and expectations of existing and potential owners of computer hardware and software manufactured by IBM Rochester. Customers are directly involved in every aspect of the product from design to delivery. Managers and non-managers alike have clearly defined quality improvement goals. Often working in teams that erase departmental boundaries, they have authority to determine how best to accomplish those goals.

IBM Rochester, which employs more than 8,100 people, recently strengthened its strategic quality initiatives by formulating improvement plans based on six critical success factors: improved product and service requirements definition, enhanced product strategy, six-sigma defect elimination strategy, further cycle time reductions, improved education, and increased employee involvement and ownership.

The IBM Rochester quality culture has been transformed from reliance on technology-driven processes to market-driven processes directly involving suppliers, business partners, and customers, delivering solutions. A 30-percent productivity improvement occurred between 1986 and 1989. Product-development time for new mid-range computer systems has been reduced by more than half, while the manufacturing cycle has been trimmed 60 percent since 1983. Customers benefitted from a threefold increase in product reliability and a reduced cost. IBM Rochester's share of the world market for intermediate computers increased one full percentage point in both 1988 and 1989, and revenue growth in 1989 was double the industry rate.

1988 Award Recipients

Globe Metallurgical Inc.
Motorola Inc.
Commercial Nuclear Fuel Division of
Westinghouse Electric Corporation

1990 Award Recipients

Federal Express Corporation

Federal Express's "People-Service-Profit" philosophy guides management policies and actions. Employees are encouraged to innovate and make decisions that advance quality goals. Federal Express provides employees with the information and technology needed to continuously improve their performance. Consistently included in listings of the best U.S. companies to work for, Federal Express has a "no lay-off" philosophy, and its "guaranteed fair treatment procedure" for handling employee grievances is used as a model by firms in many industries.

Seventeen years ago Federal Express launched the air-express industry. The company achieved high levels of customer satisfaction and experienced rapid sales growth. Today, approximately 90,000 Federal Express employees, at over 1,650 sites process 1.5 million shipments daily. Domestic overnight and second-day deliveries account for nearly three-fourths of the total, with the remainder being international deliveries. The firm's air cargo fleet is now the world's largest. Federal Express revenues totaled $7 billion in fiscal year 1990.

Customer satisfaction is high, but past accomplishments do not ensure future success. Through a quality improvement program focusing on 12 Service Quality Indicators (SQIs) tied to customer expectations, the Memphis-based firm sets higher standards for service and customer satisfaction. The company has set up cross-functional teams for each service component in the SQI. Two of these corporate-wide teams have over 1,000 employees working on improvements. Measuring themselves against a 100 percent service standard, managers and employees strive to improve all aspects of Federal Express.

Wallace Co., Inc.

Founded in 1942, Wallace is a family-owned distribution company headquartered in Houston that primarily serves the chemical and petrochemical industries. Its 10 offices, located in Texas, Louisiana, and Alabama, distribute pipe, valves, and fittings, as well as value-added specialty products such as actuated valves and plastic-lined pipe. Wallace distributes directly in the Gulf Coast area but serves international markets as well. In 1989 sales totaled $79 million. The company employs 280 associates, all of whom have been trained in quality improvement concepts and methods.

The Wallace quality initiatives have paid numerous dividends. Since 1987, Wallace's market share has increased from 10.4 percent to 18 percent. In 1985, Wallace adopted a long-term strategy of Continuous Quality Improvement. In only a few years, the company distinguished itself from its competitors by setting new standards for service. Wallace effectively merged business and quality goals, built new partnerships with customers and suppliers, and instilled associates with a commitment to one overriding aim: total customer satisfaction. Nearly everyone at Wallace is a member of a quality team.

Wallace established a Total Customer Response Network that must respond to all inquiries and complaints within 60 minutes. Its customer base has expanded. As a result, since 1987 its sales volume has grown 69 percent and, because of greater efficiency, operating profits through 1989 increased 7.4 times.

1989 Award Recipients

Milliken & Company
Xerox Business Products and Systems

HOW TO ORDER COPIES OF THE 1991 APPLICATION GUIDELINES

Individual Copies

Individual copies of the 1991 Application Guidelines are available free of charge from:

Malcolm Baldrige National Quality Award

National Institute of Standards and Technology
Route 270 and Quince Orchard Road
Administration Building, Room A537
Gaithersburg, MD 20899
Telephone: 301-975-2036
Telefax: 301-948-3716

Bulk Orders

Multiple copies of the 1991 Application Guidelines may be ordered in packets of 10 from:

American Society for Quality Control
Customer Service Department
310 W. Wisconsin Avenue
Milwaukee, WI 53203
Toll-Free: 800-248-1946
Telefax: 414-272-1734

Order Item Number T991
Cost: $20.00 per packet of 10 plus postage and handling

Postage and handling charges are:

1 packet	$ 3.50
2-5 packets	5.00
6 or more	10.00

For orders shipped outside of the continental United States and Canada, there is a fee of 25 percent of order value to cover postage and handling.

Payment

Payment options include check, money order, purchase order, VISA, MasterCard, or American Express.

Payment must accompany all mail orders.

Payment must be made in U.S. currency. Checks and money orders must be drawn on U.S. institutions.

Make checks payable to the American Society for Quality Control.

Shipment

Orders delivered within the United States and Canada will be shipped UPS or first-class mail. Special shipping arrangements can be made at time of order placement.

STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES

Manufacturing and Products

Code	Sector
01	Agriculture-crops
02	Agriculture-livestock
08	Forestry
09	Fishing and hunting
10	Metal mining
12	Coal mining
13	Oil and gas extraction
14	Mineral quarrying
15	General building contractors
16	Heavy construction contractors
17	Special trade contractors
20	Food products
21	Tobacco products
22	Textile mill products
23	Apparel
24	Lumber and wood products
25	Furniture and fixtures
26	Paper and allied products
27	Printing and publishing
28	Chemicals
29	Petroleum refining
30	Rubber and plastics
31	Leather and leather products
32	Stone/clay/glass/concrete products
33	Primary metal industries
34	Fabricated metal products
35	Machinery/computer equipment
36	Electrical/electronic equipment
37	Transportation equipment
38	Instruments/clocks/optical goods
39	Miscellaneous manufacturing

Services

Code	Sector
07	Agricultural services
40	Railroad transportation
41	Local & interurban transport
42	Trucking and warehousing
44	Water transportation
45	Air transportation
46	Pipelines, except natural gas
47	Transportation services
48	Communications
49	Electric/gas/sanitary services
50	Wholesale trade/durable goods
51	Wholesale trade/nondurable goods
52	Retail building materials
53	General merchandise stores
54	Food stores
55	Auto dealers & service stations
56	Apparel and accessory stores
57	Furniture stores
58	Eating and drinking places
59	Miscellaneous retail
60	Banking
61	Credit agencies
62	Security & commodity brokers
63	Insurance carriers
64	Insurance agents
65	Real estate
67	Holding & other investment offices
70	Hotels and lodging places
72	Personal services
73	Business services
75	Auto repair and services
76	Miscellaneous repair services
78	Motion pictures
79	Amusement and recreation
80	Health services
81	Legal services
82	Educational services
83	Social services
84	Museum and art galleries
86	Membership organizations
87	Professional services
89	Miscellaneous services

THE MALCOLM BALDRIGE NATIONAL QUALITY IMPROVEMENT ACT OF 1987 – PUBLIC LAW 100-107

The Malcolm Baldrige National Quality Award was created by Public Law 100-107, signed into law on August 20, 1987. The Award Program, responsive to the purposes of Public Law 100-107, led to the creation of a new public-private partnership. Principal support for the program comes from the Foundation for the Malcolm Baldrige National Quality Award, established in 1988.

The Award is named for Malcolm Baldrige, who served as Secretary of Commerce from 1981 until his tragic death in a rodeo accident in 1987. His managerial excellence contributed to long-term improvement in efficiency and effectiveness of government.

The Findings and Purposes Section of Public Law 100-107 states that:

"1. the leadership of the United States in product and process quality has been challenged strongly (and sometimes successfully) by foreign competition, and our Nation's productivity growth has improved less than our competitors' over the last two decades.

2. American business and industry are beginning to understand that poor quality costs companies as much as 20 percent of sales revenues nationally and that improved quality of goods and services goes hand in hand with improved productivity, lower costs, and increased profitability.

3. strategic planning for quality and quality improvement programs, through a commitment to excellence in manufacturing and services, are becoming more and more essential to the well-being of our Nation's economy and our ability to compete effectively in the global marketplace.

4. improved management understanding of the factory floor, worker involvement in quality, and greater emphasis on statistical process control can lead to dramatic improvements in the cost and quality of manufactured products.

5. the concept of quality improvement is directly applicable to small companies as well as large, to service industries as well as manufacturing, and to the public sector as well as private enterprise.

6. in order to be successful, quality improvement programs must be management-led and customer-oriented, and this may require fundamental changes in the way companies and agencies do business.

7. several major industrial nations have successfully coupled rigorous private-sector quality audits with national awards giving special recognition to those enterprises the audits identify as the very best; and

8. a national quality award program of this kind in the United States would help improve quality and productivity by:

   A. helping to stimulate American companies to improve quality and productivity for the pride of recognition while obtaining a competitive edge through increased profits;

   B. recognizing the achievements of those companies that improve the quality of their goods and services and providing an example to others;

   C. establishing guidelines and criteria that can be used by business, industrial, governmental, and other organizations in evaluating their own quality improvement efforts; and

   D. providing specific guidance for other American organizations that wish to learn how to manage for high quality by making available detailed information on how winning organizations were able to change their cultures and achieve eminence."

The Malcolm Baldrige National Quality Award

Managed by:

United States Department of Commerce
National Institute of Standards and Technology
Route 270 and Quince Orchard Road
Administration Building, Room A537
Gaithersburg, MD 20899

Administered by:

American Society for Quality Control
310 West Wisconsin Avenue
Milwaukee, WI 53203

Mr. VALENTINE. Thank you, sir.
Mr. Spiess?

STATEMENT OF MICHAEL E. SPIESS, EXECUTIVE VICE PRESIDENT, WALLACE COMPANY, INC., HOUSTON, TEXAS

Mr. SPIESS. Good afternoon. I am Michael Spiess, executive vice president of Wallace Company, Incorporated, the 1990 recipient of the Malcolm Baldrige National Quality Award in the small business category. We are the first small service company to be accorded this prestigious honor.

Quality is vital to America's future. Two outputs of total quality management are enhanced productivity and enhanced competitiveness, both of which influence our free enterprise system and contribute to our ability to compete in a global economy.

The good news for America is the Malcolm Baldrige Award, created by Congress in 1987 to improve quality and productivity, is taking hold and driving positive change in corporate America. There is an infectious response to quality across this country, and it serves as a strong, vital sign for America's future.

The Malcolm Baldrige Award criteria provided Wallace Company with the structure we needed, and gave us a road map to follow. All Wallace associates have learned a great deal about quality during the company's transformation.

I can summarize a few basic elements in what I refer to as the three truths. First, quality is more than a word, it is an all-encompassing way to doing business which leads to customer satisfaction.

Second, quality is not magic. Everybody can attain higher levels of quality and it is good for business. Quality frankly is in your self-interest. It eliminates waste, it energizes people, and it drives profits.

Lastly, quality demands 100 percent commitment to the process from 100 percent of the organization, and it starts at the top.

Since winning the Malcolm Baldrige Award, we are getting thousands of requests to offer our insights on this tremendous experience. I call these insights my observations. These observations come from my personal perspective as an officer of a small business. Indeed, Wallace Company has demonstrated that the Malcolm Baldrige Award is not out of reach of small businesses. Of course it does not come without labor and sacrifice.

First, without a sincere commitment of senior leadership, the process will go absolutely nowhere. It's essential— quality cannot be delegated. The leaders of the company must personally bring forth a cultural change within the organization. Before our quality process, John and Charles Wallace were just the owners of a company. Now, they are owners who are totally involved. Our associates at Wallace see them as human beings who really care about them.

Quality helped them communicate as well as teach and lead. The cultural change brought about at Wallace happened by opening up the avenues of communication and getting involved with the people of Wallace. We have driven out fear at Wallace. Creating a genuine quality culture requires time and financial resources. When considering applying for the Malcolm Baldrige Award, it will take a company three to five years to prepare for application submission. We recommend that a company first obtain an application and score themselves. When grading one's self, it is important to be harsh. Wallace was brutal, and it helped toughen us and focus us on the task at hand.

Wallace has made a financial investment of over $700,000 in training and education. It is critical for organizations to allow themselves to grow with the quality process on its own, until it becomes natural to where they are living it.

When a company is initially exposed to the quality movement by customers as Wallace was, is important to grow in quality far beyond the customer's demands and expectations. Although Wallace was exposed to quality by our customers, however, quality is now what we at Wallace expect from ourselves. Not only do we focus on our external customer, but we are very interested in developing good relationships with our internal customers as well. It isn't always easy, but it is extremely worthwhile.

Wallace's quality process has taught our leaders to plan ahead for the good of the company. Long term business planning is absolutely essential to our success. Short term doesn't work on today's competitive arenas.

The utilization of teams throughout all aspects of operations is critical. It is what unites associates and allows creative thinking to flourish. Building strong relationships with suppliers is very important. We call them partnerships.

Last, but certainly not least, it is essential that companies take advantage of the power of statistical process control and other quality processes such as benchmarking.

In closing, the Malcolm Baldrige criteria simply works. It causes you to know every aspect of your organization. Each year the standards are refined and raised. I respectfully request consideration be given to add two additional categories: education and health care. These are the two most pressing issues facing this Nation.

Thank you for the opportunity to offer these comments.

[The prepared statement of Mr. Spiess follows:]

TESTIMONY OF MICHAEL E. SPIESS

EXECUTIVE VICE PRESIDENT AND CHIEF OPERATING OFFICER

WALLACE CO., INC.

BEFORE THE HOUSE SCIENCE, SPACE AND TECHNOLOGY SUBCOMMITTEE

APRIL 23, 1991

Good afternoon, I'm Michael Spiess, Executive Vice President of Wallace Co., Inc., the 1990 recipient of the Malcolm Baldrige National Quality Award in the small business category. We are the first small service company to be accorded this prestigious honor.

Quality is vital to America's future. Two outputs of Total Quality Management are enhanced productivity and enhanced competitiveness, both of which influence our free enterprise system and contribute to our ability to compete in a global economy.

The good news for America is the Malcolm Baldrige award, created by Congress in 1987, to improve Quality and productivity is taking hold and driving positive change in corporate America. There is an infectious response to Quality across this country, and it serves as a strong vital sign for America's future.

The Malcolm Baldrige award criteria provided Wallace company with the structure we needed and gave us a road map to follow. All Wallace associates have learned a great deal about Quality during the company's transformation. I can summarize a few basic elements in what I refer to as The Three Truths:

- Quality is more than a word -- it is an all-encompassing way of doing business which leads to customer satisfaction.

- Quality is not magic -- everybody can attain higher levels of quality; and its good for business.

Quality is in your self-interest -- it eliminates waste; energizes people; and drives profits.

- Quality demands 100 percent commitment to the process from 100 percent of the organization -- and it starts at the top.

Since winning the Malcolm Baldrige award, we are getting thousands of requests to offer our insights on this tremendous experience. I call these insights my observations.

These observations come from my personal perspective as an officer of a small business. Indeed, Wallace company has demonstrated that the Malcolm Baldrige award is not out of the reach of small businesses. Of course, it does not come without labor and sacrifice.

First, without a sincere commitment of senior leadership, the process will go absolutely nowhere. Its essential. Quality cannot be delegated. The leaders of the company must personally bring forth a culture change within the organization.

Before our Quality process, John and Charles Wallace were just the owners of a company. Now, they are owners who are totally involved. Our associates at Wallace see them as human beings who really care about them.

Quality helped them communicate as well as teach and lead. The culture change brought about at Wallace happened by opening up the avenues of communication and getting involved with the people of Wallace -- we have driven out fear at Wallace.

Creating a genuine Quality culture requires time and financial resources. When considering applying for the Malcolm Baldrige award, it will take a company three to five years to prepare for application submission. We recommend that a company first obtain an application and score themselves. When grading one's self, it is important to be harsh. Wallace was brutal, and it helped toughen us and focus us on the task.

Wallace has made a financial investment of over $700,000 in training and education.

It is critical for organizations to allow themselves to grow with the Quality process on its own -- until it becomes natural to where their living it.

When a company is initially exposed to the Quality movement by customers, as Wallace was, it is important to grow in Quality far beyond the customer's demands and expectations. Although Wallace was exposed to Quality by our customers; however, Quality is now what we at Wallace expect from ourselves. Not only do we focus on our external customers, but we are very interested in developing good relationships with our internal customers as well. It isn't always easy, but it is extremely worthwhile.

Wallace's Quality process has taught our leaders to plan ahead for the good of the company. Long-term business planning is absolutely essential to our success. Short-term doesn't work in today's competitive arenas.

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In closing, the Malcolm Baldrige criteria simply works -- it causes you to know every aspect of your organization. Each year, the standards are refined and raised. I respectfully request consideration be given to add two additional categories -- 1) Education and 2) Health Care. These are the two most pressing issues facing this nation.

Thank you for the opportunity to offer these comments.

MICHAEL SPIESS
Executive Vice President/Chief Operating Officer
Wallace Co., Inc.

Michael Spiess is a 1971 graduate of the University of Houston, with a Bachelor of Arts degree.

Prior to joining Wallace Co., Inc., in 1978, he was employed by the Walworth Company and Gray Tool Company in sales capacities.

Mr. Spiess began his career with Wallace Co., Inc. in a sales position. In 1982, he was promoted to Branch Manager of the Tyler Texas Division and held this position until 1984, when he became manager of the Houston Division. He was then appointed General Sales Manager and held this position of dual responsibility until 1987, when he was named Corporate Vice President for Sales and Marketing.

Currently, Mr. Spiess is Executive Vice President and Chief Operating Officer. He represents Wallace Co., Inc., as a member of the American Society of Quality Control (ASQC), the Association of Chemical Industry of Texas (ACIT), The Industrial Distribution Association (IDA), and The National Association of Wholesalers (NAW).

When John Wallace, C.E.O. of Wallace Co., Inc., was asked, "Who is Mike Spiess?," he said, "Mike is a leading advocate of the Quality Movement." Mike Spiess champions Quality.

OVERVIEW

WALLACE CO., INC.

Wallace Co., Inc. is a Quality Industrial Distributor serving the gulf Coast refining, chemical, and petrochemical industries. Nearly 50 years after its founding, in 1942 by C.S. Wallace, Sr., our company is still family owned and operated. Today the Company has corporate offices in Houston, Texas, and eight branch offices in two states -- Texas and Louisiana. Employing 271 people, the firm's sales approached $90 million in 1990.

To meet the needs of our customers, we maintain a highly trained sales staff, product managers for each inventory commodity, over 12 acres of inventory under roof, and another 26 acres of pipe storage. Specifically, Wallace distributes a full line of pipe, valves, and fittings from manufacturers all over the world. These inventories are received via railroad spurs, motor freight, and company interbranch transfer trucks. Wallace distributes directly in the Gulf Coast area but serves international markets as well. Wallace's major markets in the chemical and petrochemical industries are: 1) maintenance and repair operations (MRO's) and 2) engineering and construction (E&C). MRO's account for approximately 70% of our annual sales, while E&C comprises the remaining 30%. The chemical and petrochemical industries make up approximately 85% of our customers, and the paper and pulp industry make up about 15%.

Wallace facilities include administrative offices, warehouses, pipeyards and fabrication shops. All locations are equipped with overhead cranes and forklifts. A fleet of 50 trucks responds 24 hours a day to customer needs. Wallace Co., Inc. goes beyond the scope of many distribution companies by offering specialty products to its customers. Two specialty products we offer are 1) actuated valves and 2) fabrication of plastic-lined pipe. As our suppliers reduce their customer base, these specialty products give Wallace an edge over many competitors.

Achieving excellence through Quality has made Wallace Co., Inc. a leader in our industry. Continuing to thrive, grow, and provide jobs is crucial to the future of Wallace Co., Inc. The pursuit of Quality has made the difference between us and our competitors. Quality is integral to our company, our American business life, and our community leadership. We live the Wallace way of life -- a business life consistent with our values.

As a major industrial distribution firm, we provide piping material requirements primarily to the engineering and construction industry during the '70's and mid-'80's. During the mid- to late-'80's, the Gulf Coast region of the United States experienced the worst economic downturn in recent history. This downturn severely limited construction activity in our marketplace. To further complicate this situation, two of our largest competitors filed Chapter 11 bankruptcy protection, only to emerge as divisions of other distribution firms. Our challenge was to survive in this environment and to build a new base of business from which to grow and prosper. In our case, embracing Quality as a way of doing business literally has meant our survival.

At this time, Quality was beginning to emerge as an operational philosophy in the chemical and petrochemical industry. In 1985, Wallace stood alone in its total commitment to Quality. This commitment, with its changes in culture, processes, and systems, positioned Wallace to meet the challenges we faced as a result of the economic downturn. To support a total Quality effort, senior leadership led our company with a vision of the future by demonstrating through their actions how this vision would provide the "all important bridge from the present to the future of the organization."

Since 1987, senior leadership has attended in excess of 2,424 hours of training in Continuous Quality Improvement. Training included study of the philosophies of Drs. Deming and Juran. Senior leadership, with input from all associates, developed a Quality Mission Statement. This statement is our public commitment to the principles of Continuous Quality Improvement and embodies the Quality values of Wallace Co., Inc. A Quality Management Steering Committee chaired by John W. Wallace, Chief Executive Officer, was formed. This committee plans and supervises the overall Quality program as well as ensures the total integration of our Quality and business plans, goals, and objectives. After reviewing the 1988 Malcolm Baldrige criteria, this criteria became our corporate standard.

Senior leadership is committed to providing education and training to each and every associate. Wallace has invested over $700,000 and 19,000 hours of training and education is our most important resource -- our people. All Wallace associates have received Quality training and many have received training in advanced Quality techniques.

At Wallace Co., Inc., leadership means working closely with all associates, endorsing pride of workmanship, listening to and responding to the suggestions of those closest to the job, building in Quality in all aspects of operations, focusing performance on the positive, and developing a team spirit. We foster high standards from both customers and suppliers; we take the message of Quality to all companies and individuals with whom we work. Senior leadership has empowered associates to take exceptional care of the customer. Wallace people work as "partners" with our customers to better understand their needs and expectations and to provide them with the products and services they need to compete today and in the future. Customer feedback and involvement is an essential part of our improvement process.

Extending the community of Quality to include our suppliers enhanced our position as the premier Quality leader in our industry and further demonstrated our commitment to Continuous Quality Improvement. Wallace is the only distribution firm in our industry that provides Quality training and education to suppliers. It is essential for our continued success that our suppliers become full "partners" through involvement and training.

Wallace looks toward the future to meet the needs of our customers today. To meet our goals, we focus upon our customers, utilize Statistical Process Control in our operations, and stay on the leading edge of technology. To continuously improve, Wallace has operationalized several methods. We work as a team. Through teams we secure associate involvement and utilize their ideas, skills, and talents. We seek constant innovation and are willing to explore new ideas. We invest in new technology which allows us to maintain our momentum, to increase our effectiveness, and to enhance our efficiency and speed. We employ benchmarking as a way of life. It is our way of continuously improving in all that we do -- improving all of our business processes and systems. We believe in long-range planning and are willing to forego short-term profits for long-term gains.

BE BOLD AND BE RIGHT: THE WALLACE CO., INC., WINS 1990 BALDRIGE AWARD

by Gaye E. Gilbert

CASE 80

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Case Description:
Wallace Co., Inc.

Contact:
Mike Spiess
Vice President and General Sales Manager
Wallace Co., Inc.
P.O. Box 2597
Houston, Texas
77252-2597
(713) 675-2661

Focus:
Baldrige-Winning Total Quality Process

Date Initiated: 1985

Organizational Unit: Entire Organization

Number of Employees Involved: 280

As he sat down for a client conference, Wallace Co., Inc. CEO John Wallace asked his secretary to hold all calls. Normally, she complied.

But just as Wallace and his guests were getting down to business, in she came. "I thought you'd like to take this call," she said. "It's the Secretary of Commerce on the line."

Sitting in an office filled with his collections—arrowheads and beer steins, stuffed quail and photographs of his family—John Wallace remembers his conversation with the Secretary: "He said, 'I wanted to give you my congratulations on being the second small business recipient of the Baldrige Award.'"

Although this was news the entire Wallace organization had been waiting and hoping to hear, John Wallace had to keep the call strictly confidential until the winners were announced in Washington. He believes, though, that the visitors in his office may have suspected something was up—given the broad smile on his face.

THE WALLACE COMPANY

In industrial northeast Houston, where eighteen wheelers barrel by on their way down the interstate, lies the headquarters of the Wallace Co., Inc. At the chainlink fence entrance to the grounds, a small sign is displayed: "The success of the company's future depends on the job we do today."

Wallace was founded in 1942 by Mr. C. S. Wallace, Sr., who at the age of 89 still comes to work each day. Although his two sons, John and Charles, Jr. ("Sonny"), now lead Wallace, the elder Mr. Wallace continues to keeps a close eye on the day-to-day operations of the company.

John Wallace is CEO and Sonny is President of the Wallace Company, which distributes pipes, valves, and fittings to the chemical, petrochemical, and construction industries of the Gulf Coast. In addition to replacement equipment for maintenance and repair operations (MRO), Wallace provides piping products for engineering and construction (E&C) projects. In 1981, E&C orders represented 80 percent of the company's business.

That was also the year that the Gulf Coast energy and construction boom came to an abrupt halt. Wallace, in an extremely vulnerable position because of its dependence on E&C, closed three stores in the Rocky Mountain area and laid off employees. The company was definitely in a survival mode when, in fact, two of its major competitors filed for bankruptcy.

As Wallace struggled to regain market share in the also-depressed MRO sector, the company found itself dealing with a triple threat: lean staffing, economic woes, and customers that were beginning to request evidence of consistent quality in Wallace's sales and delivery processes.

In 1985, one of Wallace's major customers, Celanese Chemical, explained its intention to consolidate its supplier base by concentrating business with those suppliers that demonstrated reliable quality. For Celanese, quality meant getting exactly what was needed, exactly when it was needed, every time. Suppliers that could not meet those quality expectations would not be asked to become long-term supplier "partners."

Wallace heeded Celanese's advice and ventured into the new world of quality. Addressing quality issues has paid off on the bottom line. By 1990, MRO accounts comprised 70 percent of the company's business. From 1987 to 1990, sales increased 69 percent and Wallace's market share grew from 10 to 18 percent. The company currently has nine branches: Beaumont, Corpus Christi, Texas City, Tyler, and Freeport, Texas; Gonzales, Hahnville, and Lake Charles, Louisiana; and Mobile, Alabama.

"In 1981, we were doing $100 million in business with 450 people," says Carl Anderson, vice president and general operations manager. "Now, we are doing $90 million with 280 people."

ON THE QUALITY JOURNEY

After Celanese presented its plans, the Wallace Company took the first steps on the road to quality. "We really did not know what the quality movement involved," remembers John Wallace. "We tried to do everything in-house, but we were stymied."

Wallace tried quality circles and formed a Quality Management Steering Committee made up of John Wallace; Sonny Wallace; Mike Spiess, vice president and general sales manager; Carl Anderson; and Bala Nathan, treasurer. But the changes were not deep or comprehensive enough. In 1987, the company decided to retain the corporate training firm of Sanders and Associates to perform a needs assessment.

Prior to the needs assessment, Sanders asked the management team if they would be receptive to the results. "We had to do some soul searching," says John Wallace. "But we agreed." Sanders interviewed and surveyed every associate. The consultants reported that there was a great need for effective, on-the-job training and cross-training. In addition, they found a lack of communication and a significant amount of fear in the organization.

"We had enough training to realize that until we got rid of the

Over the past five years, Wallace has invested more than $700,000 in 19,000 hours of training for associates. Pictured from left to right are: Paul Vita, Houston sales manager; Mike Spiess, vice president and general sales manager; Carla Cooper, district manager; Paula Hollis, sales representative; John Wallace, chief executive officer; and Carl Anderson, vice president and general operations manager.

fear factor, things wouldn't be as successful," says John Wallace. "Because we are family owned, we thought we had one big family. We found out we didn't."

To overcome the "fear factor," Wallace began an extensive training program that always included representatives of the leadership team. The company also began off-site retreats that allowed employees to speak openly about Wallace's future.

"By 1988, we'd come a long way from the needs assessment," recalls John Wallace. As an example, John relates, one of the Wallace truck drivers felt that there was a maintenance problem with her truck's tires because of a slight vibration. The tires were checked at a tire store, where they were declared safe, but the driver still did not agree. Her supervisor said, "If you don't feel comfortable, go talk to John." She did, and the tires were replaced. "A few years ago, I would never have had visitors from a branch or warehouse," he says.

In 1989, the Wallace Company took the biggest step yet on its quality journey. In early April of that year, Mike Spiess and Paul Vita, Houston sales manager, attended the first Quest for Excellence conference in Washington, D. C.

At the conference, they heard the quality achievements of the first winners of the Malcolm Baldrige National Quality Awards: Motorola, Commercial Nuclear Fuel Division of Westinghouse, and Globe Metallurgical. Spiess and Vita struck up a friendship with Ken Leach, Vice President of Globe Metallurgical, a company similar in size to Wallace. Leach offered guidance and encouragement to the pair.

At a management retreat soon after their return, Spiess presented the Baldrige guidelines as a potential roadmap for Wallace to follow.

GRADING WALLACE

Paul Vita explains that he and Spiess had already investigated the quality philosophies of the major gurus: Juran, Deming, and Feigenbaum. "We were multidenominational," he says. "We followed all of the major concepts that worked for us. You have to see the practicality for your own company."

At the weekend retreat, 30 Wallace associates—including the leadership team—used the application to grade Wallace as though it had applied for the Baldrige. Where Wallace differs from many companies is in the application of concepts like Statistical Process Control (SPC) and Failure Mode and Effects Analysis (FMEA) to a service organization. Wallace had SPC in place, extensive ongoing training, and leadership commitment, yet gave itself only 210 points out of 1,000 on the application.

Wallace still had a long row to hoe. "We had seen some benefits internally," recalls John Wallace. "We were seeing advantages of establishing relationships with customers. We were building evergreen accounts—once you are in the door, you've got the account forever unless you mess it up."

Spiess felt certain that Wallace had already established the foundation for quality and that the Baldrige Award guidelines would provide the structure for growth. "To my knowledge," says Spiess, "we are one of a few companies that has used Malcolm Baldrige criteria to guide its improvement in quality."

In a move typical of hard-driving Wallace, those at the retreat brainstormed a two-year timeframe for improvement—then condensed the process to less than a year.

"It was 'Katy, bar the door,' here we come!" recalls Vita.

GOING FOR THE BALDRIGE

At the retreat, Wallace also made the commitment to apply for the Baldrige Award. "We looked at each other as if we were crazy," Sonny Wallace says.

Despite his hectic schedule after Globe won the Baldrige, Ken Leach came down from Ohio for a visit with Wallace. "It was small business talking to small business," says Sonny Wallace. "Leach talked about winning the Baldrige, about the type of business he was in, about their interplay with suppliers, and the improvements as a result of their quality process.

"Once we had decided to go for the Baldrige ourselves, we really dissected the application. We developed 21 Quality Strategic Objectives (QSOs), which were our way of addressing areas that would have the most impact. What we really wanted to get to is Section 7: Customer Satisfaction."

A study group then condensed the original 21 QSOs into 16. These QSOs crystallize Wallace's quality ambitions. Throughout the company, all projects relate to one of the QSOs.

THE PEOPLE SIDE OF QUALITY

Nine of the QSOs are directed to improving human resources issues. Over the past five years, Wallace has invested more than $700,000 in 19,000 hours of training for associates.

The "People Side of Quality" (PSQ), developed with the assistance of Sanders, teaches associates to recognize and use different social styles and ways of working with others, to recognize and break existing paradigms, and to work effectively in teams.

The discussion of paradigms had a tremendous impact on Wallace. "Sonny and John's paradigms were deeper than anyone's," says Paul Vita. "They were literally born into the company. Yet they made the commitment to change everything, including the logo."

In 1988, Wallace added a stylized "Q" with the letter "W" inside it to the company logo. That year the company also wrote a mission statement. The statement, circulated for input to all associates, took three drafts to complete. It is now posted in the lobby, lunchroom, and warehouse

COMPUTERS AT WALLACE

Carl Anderson has worked at Wallace for 23 years. During those years, Wallace has made the commitment to use computer technology to streamline operations.

However, reminds Anderson, "Technology is still zero without people." Out of Wallace's training program came the ideas for SPC coordinators and On-the-Job Training Teams. Each branch has an SPC coordinator who evaluates the SPC data gathered at the branch and functions as a team resource. Anderson is himself a coordinator, and underwent extensive SPC training.

After seven two-day training sessions and a year of on-the-job training, coordinators took a two-day test on PSQ and SPC principles in order to be certified. The test included essay questions, case studies, and team meetings that coordinators had to lead.

Each month, all SPC coordinators meet in Houston to discuss SPC measurements and take additional training. Every two weeks, the coordinators hold a teleconference led by Anderson. The first question he asks is, "What quality 'wins' has your branch experienced since our last meeting?"

"We talk about solutions and improvements," says Anderson. "For example, how are you going to raise on-time delivery?" Critical factors tracked are on-time delivery, credits, and returned goods authorizations (RGAs). The computer system has been modified to track these factors on-line. Monthly charts are posted in Houston and at branches.

"Measures were developed partially by the SPC Team and partially by small teams," says Anderson. In addition to the critical factors, there are 35 area measures that track such things as computer down-time, nonscheduled maintenance, or inventory accuracy. "When we got into the Baldrige criteria, we wanted every associate to be involved in data gathering in some way," Anderson explains.

Recently, the SPC Team finished its evaluation of the effectiveness of tracking. "We are going to drop the tracking of inventory items in the proper location and lost-time accidents, because we have not tracked any incidents in the last seven to nine months," says Anderson. "We will be tracking customers below a certain percentage of gross profit so we can use them as a target for improvement. We'll also track the delivery performance of all MRO accounts, not just the top five."

At heart, SPC seeks to minimize process variation. Used extensively in manufacturing settings, SPC ensures that production is within established specifications. In its application to service organizations, as at Wallace, a process, product and quality expectations are defined and then tracked. If, for example, the process is on-time delivery, then pulling the item from inventory and transportation is part of the process, getting the item to the customer site in the product, and "on time" in the specification. (At Wallace, even the definition of "on time" is a complex issue since customers may define the term differently. A customer's on-time definition is part of an on-line customer profile.)

Another tool used by Wallace to evaluate processes is Failure Mode and Effects Analysis (FMEA). With FMEA, all of the possible ways a process (or in a manufacturing setting, a product) could fail are investigated, and then alternative processes to prevent failure are designed.

During training, it became obvious that even defining a process could be difficult. For this reason, Wallace created On-the-Job Training (OJT) Teams that analyze one step of a particular process, such as the sales order process. Branches and departments are asked to volunteer a best performer of a process from their area to become members of an OJT Team. The team then defines the mission, breaks into two groups that define the process separately, "merge" the two versions into a consensus definition.

But this "merged" version is used only for training purposes. The next step of the process is to produce an "Ideal Process Flow" that could be best performed by everyone in the company with the least variation. This "Ideal Process Flow" is then used to generate a Standard Operating Procedure for a process and specific Job Work Instructions for each step within it. The team provides pilot training, revises the process based on feedback, and then gives training to all sites.

Wallace's computer system is the bedrock of much of the company's success. All branches have computers hooked into the mainframe at headquarters. The computer is used not only to track SPC measurements, but also to track employee involvement in teams. Forty percent of the company's orders now come in via an Electronic Data Interchange (EDI) system. In 1988, less than five percent of orders came in through EDI.

"EDI allows us to build a closer relationship with our customer base," says Anderson. "It results in a great amount of error reduction, cycle time reduction, and allows JIT principles to work. For instance, pricing errors are greatly reduced because there is price cross-referencing on the system."

A customer sends an order electronically to a value-added network (VAN), that functions essentially as an electronic "mailbox." Wallace then accesses the VAN (currently eight times a day) and pulls its orders. Wallace receives an average of 1500 purchase orders a day.

"EDI is one reason we are able to handle almost the same volume we did in 1981, but with fewer people," explains Anderson.

in Houston and at all branches. Wallace associates are given individual pocket-sized versions as well.

"Mike and I have had associates come to us and ask how to handle a problem or situation," says Vita. "We suggest that they re-read our mission statement and see if they can find their own ethical solution. We've never had anyone come back for further assistance. What the mission statement really says is, 'Go ahead. Be bold and be right.'"

Other than the mission statement, Wallace does not go in for the display of banners, slogans or mottos. "There isn't anything you need to say beyond quality," explains Vita. "If we had to have a slogan, it might be 'Quality will not be sacrificed.' But we're not big into banners and b. s.—we're into action."

Empowering Associates

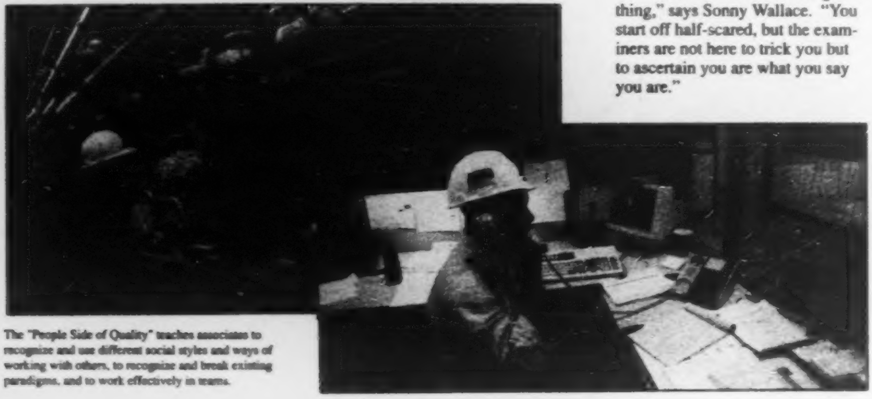
Wallace is currently searching for a director of Human Resources. Until the position is filled, the HR director's duties are handled by a team of associates: John Wallace, Jim Cain, Paula Hollis and Carla Cooper. The team started off with a retreat at April Sound to brainstorm better human resources processes. The retreat included associates from across the company.

Point Teams, Wallace's name for project teams, were formed to address many of the issues raised at the retreat: a new performance evaluation process, a new employee assistance program, new associate handbook, career development, and employee relations, among others. Other Point Teams are developing a new employee orientation package and a Phase II Quality Needs Assessment that will again survey and interview all associates.

Wallace underscores quality training by evaluating associates' use of 50 quality skills on the job. The Performance Enhancement Program relies on dual evaluations of these skills by both the associate and the supervisor. After a pre-conference workshop, the associate and supervisor receive copies of the evaluation form and a specific number of colored dots with which to rate the importance of the skill to the job as well as the associate's performance. At a conference, which is left to the discretion of the associate, discrepancies, strengths, and weaknesses are discussed.

The Total Customer Involvement Program underlines the principles of empowerment taught in training. In this program, associates from Wallace meet with their counterparts in customer companies. Wallace associates have taken to heart the importance of quality.

In just one example, a load of flanges was purchased from an overseas manufacturer for delivery to a Wallace customer. On the boat trip over, the shrink wrap on the cartons tore, allowing sea water to rust the outside of the flanges.



The "People Side of Quality" teaches associates to recognize and use different social styles and ways of working with others, to recognize and break existing paradigms, and to work effectively in teams.

Wallace's commitment to empowerment was tested when the associate receiving the flanges refused to accept the shipment. Although the damage was chiefly cosmetic, the associate felt that Wallace could not deliver it to the customer.

"The associate came into my office and said, 'I wanted to let you know I just refused the shipment you were looking forward to receiving.' He was empowered to refuse if quality was not sufficient," says John Wallace. To keep the delivery commitment to the customer, Wallace bought flanges at higher domestic prices.

A SITE VISIT

Wallace applied for the Baldrige in the spring of 1990. A group of Wallace associates wrote the application to support the company's bid for the award. "It was a very rewarding experience," says Carl Anderson, "but it was also the most hectic." On August 3, 1990 the company learned it had been selected for a site visit. Only the final candidates for the award are visited by a team of examiners. These examiners are quality professionals—selected by a rigorous process—who evaluate, score, and verify the accuracy of an application through site visits.

Wallace's site visit lasted three full days. During that time, the examiners interviewed associates and reviewed the documentation for the application. Wallace took the unusual approach of documenting the application not just by section, but by paragraph. "I don't think the examiners had ever seen an application documented by each paragraph," says Anderson.

During the site visit, Paula Hollis explained the company's documentation system to the examiners. She led them into the quality conference room where three file cabinets, each six feet tall with five drawers of data, contained the paragraph-by-paragraph, sentence-by-sentence documentation of the company's application.

"Before I could even finish, the examiners had opened the files and were pulling out folders," she says.

"YOU START OFF HALF-SCARED"

"The site visit itself was a great thing," says Sonny Wallace. "You start off half-scared, but the examiners are not here to trick you but to ascertain you are what you say you are."

All at Wallace were impressed with the examiners' stoic attitudes and expressions. "The examiners showed no emotion," remembers Sonny Wallace. "I wouldn't want to play poker with any of them."

"The examiners were top notch," adds Vita. "It was a full-fledged interrogation. The examiners were adept at asking questions. They found out far more about the corporation than was included in the application."

On the last day the examiners split up and went to two branches. Half went to Gonzales, Louisiana, with John Wallace and Mike Spiess. The other half went to Beaumont with Sonny Wallace and Carl Anderson.

At the two branches, the examiners talked to almost every associate. They also made sure to verify the procedures that the associates followed. For example, all pipe sold by Wallace has been stamped with a manufacturer's heat number. These heat numbers can be used by any associate at any branch to pull up on computer the pipe's Mill Test Report (MTR).

MTRs contain the actual information about the pipe's chemical and physical properties, and are crucial for matching pipe to its final service application. The MTR is supplied by the manufacturer. Copies of MTRs used to be sent to each branch where an associate had to manually retrieve the MTR sent out with each order. Now, MTRs are scanned into the computer system at headquarters and are then available online to any associate at any branch. Hard copies of the MTR can be immediately printed.

While on their tour of the Beaumont warehouse, one of the examiners wrote down a heat number from a randomly selected joint of pipe. Then he walked up to a surprised associate and asked to see the pipe's MTR.

"Our associate went right to the computer and showed them the whole thing," says Anderson. "I don't think I've ever seen anyone so proud."

Another memorable event occurred during a regularly scheduled safety teleconference held while the examiners were at Wallace. The safety meeting brings together branches and headquarters to talk about safety issues.

An examiner chose to attend the meeting and listen to the interchange, unbeknownst to the branch representatives. By that time the branches other than Gonzales and Beaumont realized that they would not be visited. "Those branches that didn't get visited felt left out," explains Sonny. "The associates were keyed up—there was anxiety among the troops."

As one branch manager vividly described it during the safety meeting, "I feel like we got all dressed for the party, but nobody came."

The senior examiner then broke in and took that opportunity to talk to the branches and tell them that although they were not visited, they should not view that as negative.

"I firmly believe the process was fantastic. It brought the associates together—it's been a great experience," says Anderson.

WALLACE WINS

Waiting for the judges' decision on the 1990 winners was difficult. "I was at home," says Carla Cooper. "I didn't even want to go on vacation."

Associates were called into the lunchroom for the official word that Wallace had won the Baldrige. Mike Spiess read aloud the announcement. Tears, hugs, and excitement followed.

"When you kick over an antbed—that's what it was like," Cooper says.

"This place went wild," adds Paula Hollis. "And the response we received, we never dreamed of. People have sent flowers, telegrams."

"After we won, I attended a vendor-supplier partnership meeting at Bechtel," says Cooper. "Wallace was one of Bechtel's first partnering teams. At the meeting, they all applauded Wallace. I was really proud when a consultant came up to me afterwards and asked, 'Are you with *the* Wallace Company?'"

Winning the Baldrige Award has affirmed associates' pride in Wallace's accomplishments. At the safety meeting held October 16—the first since Wallace had been named winner of the Baldrige Award—the topic was occupational health. Part of the regular format is a warm-up exercise to get associates talking about the meeting's subject.

The associates began to brainstorm safety "wishes" now that Wallace had won the Baldrige Award. One associate suggested fire drills but was told by others in the group that because the building was one story, Wallace did not have to have drills. Replied another associate: "We do a lot of things we're not required to do because we *are* world class.

A SOLID FOUNDATION

"The Baldrige Award criteria was the missing ingredient for us," says Mike Spiess. "We had had several years of SPC and PSQ but we were missing the overall program. The Baldrige criteria became our roadmap. It gives seven distinct criteria to meet, and when they are complete you are well on your way.

"It's a nice, clean Total Quality Management package that gives a solid foundation."

Wallace's solid foundation has produced numerous quality "wins," among them:

• Through safety team meetings that every employee attends and a Quality Alert "Safety First, Family First" program, Wallace was reinstated by its insurance carrier. Before the program, the company had been dropped by its carrier and forced to join the much more expensive state high-risk pool.

- Wallace has established a performance guarantee for its business "partners" whereby the company will rebate its profits for those shipments that cause its on-time delivery performance to fall below 95 percent. Unique to Wallace in the distribution industry, the delivery guarantee level was raised to 98 percent in January.

- Wallace's customer service improvements include a Total Customer Response Network, which offers a toll-free phone number to handle customer questions and complaints in 60 minutes or less.

By 1994, Wallace is aiming for ten-fold improvement in all key processes and systems.

- Wallace involves its customers and suppliers in continuous improvement through a Tri-Level Vendor Certification Task Force. The Task Force developed a certification process that spells out quality requirements.

- Wallace's attention to quality is recognized by its customers. In 1989, the company achieved the highest rating yet given on Monsanto's supplier quality audit. Wallace was also chosen as the first distribution supply partners of Bechtel, Inc. and Brown and Root, Inc.

Wallace has added two other ambitious goals to its list. By 1993, the company is committed to achieving 99 percent on-time performance. By 1994, Wallace is aiming for ten-fold improvement in all key processes and systems.

"A National Model for Quality"

Spiess believes that the most important factor in the company's success is the Wallace associates. "We have focused a great deal on the people side of quality," he says. "You must have a culture in your company in which people are able to grow and prosper."

Part of Wallace's new culture was doing away with the terms employees and managers and replacing them with associates and leaders. "Management means control," explains Spiess. "Leader means clearing the way so people can be free to offer and make changes."

To Spiess there were two reasons he felt confident Wallace could win the Baldrige award. "I always knew we could do it," Spiess says. "Number one, I had a lot of faith in the leadership of this company. Number two, I'd pit the associates of the Wallace Company against anyone.

"We had a total team effort pulling this wagon."

Spiess says that Wallace never did anything to raise false expectations about winning the award. The fact that the company was chosen for a site visit was a win to Wallace. And the moment they won, says Spiess, "the Wallace Company became a national model for quality."

That day in the lunchroom, as Spiess spoke to the gathered associates, he says, "I asked them how many times as you go through life do you really achieve your dream? Sometimes you wake up and realize it's a dream, then one day you wake up and keep pinching yourself—and find out it's true."

Case

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Mr. VALENTINE. Thank you, sir.

Mr. West?

STATEMENT OF JOHN R. WEST, MANAGER, CORPORATE QUALITY IMPROVEMENT, FEDERAL EXPRESS CORPORATION, MEMPHIS, TENNESSEE

Mr. WEST. Good afternoon. I am John R. West, manager of corporate quality improvement for Federal Express Corporation.

First, a couple of our key strategies on quality improvement. Number one, our "people first" philosophy. Federal Express' "people first" philosophy has been the key foundational element of any success that we have had to date. We believe strongly in the equation ES equals CS, or employee satisfaction equals customer satisfaction. Our satisfied employees and their resulting excellent performance is the biggest single reason why our customers keep on coming back for more.

To assure and promote employee satisfaction, we have implemented several programs or policies: survey feedback action, guaranteed fair treatment, the open-door policy, and pay for performance, just to name a few.

Our survey feedback action program forms the basis for one of only three corporate objectives that we have each fiscal year. Each spring we conduct a mandatory survey of all 93,000 plus Federal Express employees. It contains 29 questions and can be completed in only about 15 minutes. The first 10 of these 29 questions comprise what we term the leadership index. These questions relate to the direct manager of the employee. Questions are such as, our manager helps us get our job done better, or, my manager treats me with respect. The next questions are about the management above that direct manager and the remaining questions are about the company in general. I might add, and this is the important part, that this survey is anonymous.

Once the survey is scored, and this is an important correction to this sheet, a score sheet is returned, not the survey, a score sheet is returned to the manager, as well as a corporate score sheet for the entire corporation so that the manager can compare his or her scores to the entire corporate score on these 29 issues.

The corporate people objective then is to collectively score at least well this year as we did last year on the leadership index, or the first 10 questions, assuming that we did well last year. If we didn't do so well last year, then the corporate goal is to do better than we did last year.

If we do not meet this objective, then no one in senior management gets any bonus money, which for senior executives can be as much as 40 percent to 50 percent of their annual salary, so we mean people first.

A second strategy is to daily measure the key types of service failures from a customer perception point, and set a stretch goal of reducing the actual numbers of these failures year over year, despite annual increasing volume growth. This set of 12 components is known as our service quality indicator, and is the basis for our annual corporate service objective. Our five year goal is to have only one-tenth of the failures that we had at the beginning of the first year. As with our people objective, no one in senior management gets any bonus money unless we perform to goal.

These are only two of many key strategies we have incorporated, and as you may have discerned, we tie these to our MBO or management by objective program, another key critical success factor to any success that we've had.

As was asked in the questionnaire, any of the above three programs could be easily, well maybe easily, but could be replicated by other companies or agencies, if they so chose.

In terms of improvements to the Malcolm Baldrige National Quality Award, we think it is nearly perfect right now, but one thing we've noticed is that many companies are using this for a long range improvement process, if you will, and we would simply recommend that not so many changes be made to the application guidelines from year to year so people can continue on, because it is very hard to change—it is very hard to change mid-stream with too many changes going on.

Other ways to improve awareness and implementation would be for other cabinet departments within the Government to adopt the Baldrige Award principals for their areas. For example, we have experienced the Department of Transportation's interest, and have heard of the Department of Education's interest. If we think of the entire country in terms of a large network of internal customer/supplier relationships, it makes sense to have total deployment in the U.S. Government. For example, for education, are the students that are being supplied to us from the schools able to "hit the ground running" so to speak. Are the schools themselves using the quality improvement process to administer their operations? And I might add that I think the latter is more important to get the former done.

We at Federal Express very much appreciate the opportunity to share our views with you today. Thank you.

[The prepared statement of Mr. West follows:]

FEDERAL EXPRESS CORPORATION
1990 MALCOLM BALDRIGE NATIONAL QUALITY AWARD WINNER

Prepared by
John R. West, Manager Corporate Quality Improvement

KEY FEDERAL EXPRESS QUALITY IMPROVEMENT STRATEGIES

- **People first Philosophy**

Federal Express' "People First" philosophy has been the key foundational element of any success that we have had to-date.

We believe strongly in the equation ES=CS, employee satisfaction equals customer satisfaction. Our satisfied employees and their resulting excellent performance is the biggest single reason our customers keep coming back for more.

To assure and promote employee satisfaction, we have implemented several programs/policies: Survey-Feedback-Action; Guaranteed Fair Treatment; Open Door; and Pay-for-Performance, to name a few.

Our Survey-Feedback-Action program forms the basis for one of only three corporate objectives that we have each fiscal year.

Each spring we conduct a mandatory survey of all 93,000+ Federal Express employees. It contains 29 questions and only takes about fifteen minutes to complete.

The first ten questions comprise what we term the "leadership index." These questions relate to the direct manager of the employee. For example, "our manager helps us get our job done better," or "my manager treats me with respect."

The next questions are about the management above that direct manager and the remaining questions are about the Company in general.

I might add that the survey is anonymous.

Once the survey is scored, it is returned to the manager and a score sheet for the entire corporation is also enclosed so the manager can compare his/her results to the corporate totals.

The corporate "people" objective then is to collectively score at least as well this year as we did last year on the leadership index; assuming that we did well last year. If we did not do well last year, then the goal will be to do better than we did last year.

If we do not meet the objective then, no one in the senior management rank gets one cent of bonus money at the end of the year. For our division heads this can be as much as 40-50% of their annual salary.

A second strategy is to daily measure the key types of service failures (from a customer's perception) and set a stretch goal of reducing the actual numbers of these failures year over year, despite annual increasing volume growth. This set of 12 components is known as our Service Quality Indicator and is the basis for our annual corporate "service" objective.

Our five year goal is to have only one-tenth of the number of failures that we had at the beginning of the first year. As with our people objective, if this one is not met, no one in senior management receives any bonus money.

These are only two of many key strategies we have incorporated. As you may have discerned, both are tied to a third key strategy - that of using the Management-by-Objective (MBO) program as it was meant to be used.

Any of the above three programs could be replicated by other companies or agencies, if they so chose.

We recommend that the Malcolm Baldrige National Quality Award Application Guidelines change less from year-to-year. Many companies are using the guidelines for long-term self-improvement and it is hard to make the adjustment when significant changes are being made each year.

Other ways to improve awareness and implementation would be for the other Cabinet departments to adopt the Baldrige Award principles for their areas.

For example,, we have experienced the Department of Transportation's interest and have heard of the Department of Education's interest. If we think of the entire country in terms of a large network of internal customer/supplier relationships, it makes sense to have total deployment in the U.S. Government. For example, are the students being supplied to us from the schools able to "hit the ground running?" Are the schools themselves using the quality improvement process to administrate their operations?

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Mr. **Valentine**. Thank you, Mr. West.
Mr. Osterwise?

STATEMENT OF LARRY OSTERWISE, VICE PRESIDENT, MARKET-DRIVEN QUALITY ASSESSMENT, IBM-U.S.A., PURCHASE, NEW YORK

Mr. **Osterwise**. Mr. Chairman and members of the committee, good afternoon, I am Larry Osterwise, vice president for marketing driven quality assessment for IBM United States, formerly general manager of IBM Rochester, Minnesota, a 1990 winner of the Malcolm Baldrige National Quality Award. I appreciate the opportunity to appear before you to discuss the Baldrige Award.

IBM Rochester received a site visit by the Malcolm Baldrige examiners in 1989 and was named a 1990 Baldrige winner, thus we are in an excellent position to comment on the value of the application, assessment and award process, whether winning the award or not.

The Baldrige process is an excellent self-examination and self-assessment tool. Requiring an applicant to take an enterprise-wide view and examine the linkages of all parts of one's business, including participation of customers and suppliers. It also stresses the utilization of human resources and the fundamental need for education of every employee in good quality practices.

Today I would like to discuss three things. The value of the award process to IBM Rochester, to IBM United States and to the industry in general, the strengths of IBM Rochester that helped us win the award, the things we're doing to share our experiences, and a fourth, the creative linkages between industry and Government in the area of education, with special emphasis on some of IBM's activities in Minnesota.

The Baldrige guidelines are excellent guiding principals for a quality management system and a self-assessment tool. In IBM Rochester, we used the Baldrige process to identify shortcomings or warts in our quality management system. In both 1989 and 1990, warts were identified, quality improvement teams assigned, and appropriate action plans put in place.

While teamwork and action plans are not new to IBM, I am confident that many of the opportunities targeted for improvement would not have been identified without the scope and rigor applied with the Baldrige process. Not winning in 1989 may have been more valuable to us than winning in 1990. But winning was certainly nice. In fact, the entire IBM Company, including our operations in Europe, Latin America, Canada, Japan, the rest of Asia, is employing a self- assessment process based on the Baldrige criteria to identify opportunities for improvement.

The Baldrige criteria focus on trend management and benchmarking for continuous improvement toward world class competitiveness. We have benchmarked with many previous Baldrige winners, and over 150 companies in our quality journey thus far.

IBM Rochester's goal is to be the undisputed leader in customer satisfaction. Our quality policy is Rochester excellence, customer satisfaction, the quality journey continues. Our view of our future, our vision, is comprised of four simple statements. First, the customer shall be the final arbiter; second, we shall have quality, excellence, and execution across our entire enterprise; third, our products and services will be first with the best, and fourth, our people will be fully enabled, empowered, thereby excited and rewarded.

Our vision is then supported by six critical success factors: education, requirements definition, product strategy, defect reduction, cycle time reduction, and enhanced employee involvement. These are all in concert with IBM's basic beliefs and market driven quality principals. All of these items can be contained on two simple wallet cards.

Included with this submitted statement to this subcommittee is an overview brochure about IBM Rochester's quality approach. Let me highlight several processes where IBM Rochester was recognized at or near world class.

First, customer satisfaction. It demands the involvement of customers throughout the business cycle, our customer involvement process ensures the voice of the customer, is heard very early in the planning processes. Supplier partnerships, like customer partnerships, are critical to cycle time reduction and product quality, early involvement and education for our suppliers in quality concepts are key to effective and efficient product development. As an example, IBM Rochester is assisting our suppliers in Malcolm Baldrige assessment training and evaluation.

In strategic planning areas, such as methods of market segmentation, we've worked closely with leading universities on how to use leading edge planning theories and planning techniques, thus benefitting both ourselves and higher education. Education of employees on a wide variety of topics is fundamental to the focus on quality. We offer employee education on everything from organizational transformation, to quality tools and techniques. In fact, at IBM Rochester we spend about five times the national average on employee education, or about five percent of payroll. In addition, we create opportunities to expand our employees' direct contact with customers, thus increasing their awareness of the importance of customer satisfaction.

Since winning the Baldrige Award, we are pleased and proud to share our story. IBM has established market driven quality institutes in Rochester, Minnesota, and Palisades, New York, to share our Malcolm Baldrige experience and our corporate market driven quality strategy. We estimate that by year end 1991, about 10,000 people will have attended full day quality briefings at these locations. In addition, IBM Rochester is handling hundreds of calls per week, largely from U.S. industry, on various aspects of our quality programs, formal and informal benchmarking activities will number in the hundreds by year end 1991, allowing for two-way communications between IBM and other companies.

As are the other Baldrige winners, IBM Rochester is providing speakers for a wide variety of seminars, conferences, trade shows, meetings, associations, government functions, and educational institutions, both in the U.S. and internationally. I would estimate that by the end of this year, we will have told our story, if you will, to well in excess of 100,000 people. Our quality briefing, education, as well as our advertising is designed to share our quality tools, techniques and approaches.

Given this committee's interests in the relationship between total quality management principles and education, I would like to share with you some of our activities in this area, giving special focus to the number of initiatives we have going on in Minnesota. IBM has had a strong tradition of employee education within the company since 1933. This year on any given day, some 22,000 IBMers are in class around the world. That represents about seven million student days per year, and an annual investment of more than $1.1 billion. In IBM Rochester, education of employees was one of the critical success factors necessary to achieve our goals and our vision. IBM's involvement in education extends beyond the company, to K through 12 and higher education.

IBM chairman, John Akers, chairs the business roundtable's education task force, and serves on President Bush's education policy advisory committee. In addition, IBM supports many education initiatives and encourages employee participation in these projects. With IBM Rochester's participation since 1989, the Minnesota Council for Quality, which established the Minnesota Quality Award, has begun an education initiative. The purpose of the initiative is to improve curricula, to include quality concepts, promote active involvement of all Minnesota education institutions in the quality initiatives, recognize quality improvement efforts of Minnesota educational institutions, and provide an ongoing forum for education and business leaders to exchanges ideas related to continuous quality improvement.

To that end, during 1991, the Minnesota Council for Quality and 13 educational institutions from K through 12, through the University of Minnesota, will pilot self- assessments under the Baldrige-like Minnesota Quality Award guidelines. They will do this to ascertain, are these guidelines appropriate for education; what, if any, adaptations and modifications are required; what training materials and efforts are required to assist educational institutions to prepare for the Quality Award process; what categories, examinations and judging principles and conditions of award competition should be established? The appropriate supporting organizations, including IBM Rochester, are participating in this exciting experiment. We should have an interim status report by November of this year.

In summary, we are very pleased to have received the 1990 Malcolm Baldrige National Quality Award. More important, we have benefitted from the experience, the applications, the assessments, the sharing. Quality pays. It is one of our best products. At Rochester, our revenue, profit, market share are growing, while our expenses and cycle time are decreasing. Our morale is the best in IBM U.S. and our products and services are globally competitive. Most important, our customer satisfaction is increasing.

Although we in IBM and IBM Rochester have always been dedicated to quality and customer satisfaction, the Malcolm Baldrige National Quality Award sharpened our focus, provided a vehicle for sharing, and gave us the sustaining drive enabling us to reach for our goal of total customer satisfaction.

This committee in particular, the Congress and President Reagan have our thanks for establishing the Malcolm Baldrige National Quality Award, and starting this important and beneficial process.

I would be happy to answer any questions you have later. Thank you very much.

[The prepared statement of Mr. Osterwise follows:]

STATEMENT

OF

MR. L. L. OSTERWISE
VICE PRESIDENT
MARKET-DRIVEN QUALITY ASSESSMENT

IBM CORPORATION
APRIL 23, 1991

SUBCOMMITTEE ON TECHNOLOGY AND COMPETITIVENESS

COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY

U.S. HOUSE OF REPRESENTATIVES

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

GOOD AFTERNOON, I AM LARRY OSTERWISE, VICE PRESIDENT OF MARKET DRIVEN QUALITY ASSESSMENT FOR IBM UNITED STATES, FORMERLY GENERAL MANAGER, IBM ROCHESTER, MN, A 1990 WINNER OF THE MALCOLM BALDRIGE NATIONAL QUALITY AWARD. I APPRECIATE THE OPPORTUNITY TO APPEAR BEFORE YOU TO DISCUSS THE MALCOLM BALDRIGE AWARD.

IBM ROCHESTER RECEIVED A SITE VISIT BY THE MALCOLM BALDRIGE EXAMINERS IN 1989, AND WAS NAMED A 1990 BALDRIGE WINNER. THUS, WE ARE IN AN EXCELLENT POSITION TO COMMENT ON THE VALUE OF THE APPLICATION, ASSESSMENT AND AWARD PROCESS, WHETHER WINNING THE AWARD OR NOT.

THE BALDRIGE PROCESS IS AN EXCELLENT SELF-ASSESSMENT TOOL, REQUIRING AN APPLICANT TO TAKE AN ENTERPRISE-WIDE VIEW AND EXAMINE THE LINKAGES OF ALL PARTS OF ONE'S BUSINESS, INCLUDING PARTICIPATION OF CUSTOMERS AND SUPPLIERS. IT ALSO STRESSES UTILIZATION OF HUMAN RESOURCES AND THE FUNDAMENTAL NEED FOR EDUCATION OF EVERY EMPLOYEE IN GOOD QUALITY PRACTICES.

TODAY, I WOULD LIKE TO DISCUSS:

o THE VALUE OF THE AWARD PROCESS TO IBM ROCHESTER, TO IBM U.S., AND TO INDUSTRY IN GENERAL

o THE STRENGTHS OF IBM ROCHESTER THAT HELPED US WIN THE AWARD

o THE THINGS WE'RE DOING TO SHARE OUR EXPERIENCE, AND

O THE CREATIVE LINKAGES BETWEEN INDUSTRY AND GOVERNMENT IN THE AREA OF EDUCATION, WITH EMPHASIS ON SOME OF IBM'S ACTIVITIES IN MINNESOTA.

THE BALDRIGE GUIDELINES ARE EXCELLENT GUIDING PRINCIPLES FOR A QUALITY MANAGEMENT SYSTEM AND A SELF-ASSESSMENT TOOL. IN IBM ROCHESTER, WE USED THE BALDRIGE PROCESS TO IDENTIFY SHORTCOMINGS OR "WARTS" IN OUR QUALITY MANAGEMENT SYSTEM. IN BOTH 1989 AND 1990, "WARTS" WERE IDENTIFIED, QUALITY IMPROVEMENT TEAMS ASSIGNED, AND APPROPRIATE ACTION PLANS PUT IN PLACE. WHILE TEAMWORK AND ACTION PLANS ARE NOT NEW TO IBM, I AM CONFIDENT THAT MANY OF THE OPPORTUNITIES TARGETED FOR IMPROVEMENT WOULD NOT HAVE BEEN IDENTIFIED WITHOUT THE SCOPE AND RIGOR APPLIED WITH THE BALDRIGE PROCESS.

NOT WINNING IN 1989 MAY HAVE BEEN MORE VALUABLE TO US THAN WINNING IN 1990...BUT WINNING WAS CERTAINLY NICE. IN FACT, THE ENTIRE IBM COMPANY, INCLUDING OUR OPERATIONS IN EUROPE, LATIN AMERICA, CANADA, JAPAN, AND THE REST OF ASIA, IS EMPLOYING A SELF-ASSESSMENT PROCESS BASED ON THE BALDRIGE CRITERIA TO IDENTIFY OPPORTUNITIES FOR IMPROVEMENT.

THE BALDRIGE CRITERIA FOCUS ON TREND MANAGEMENT AND BENCHMARKING FOR CONTINUOUS IMPROVEMENT TOWARD WORLD CLASS COMPETITIVENESS. WE HAVE BENCHMARKED WITH MANY PREVIOUS BALDRIGE WINNERS AND OVER 150 COMPANIES IN OUR QUALITY JOURNEY THUS FAR.

IBM ROCHESTER'S GOAL IS TO BE THE UNDISPUTED LEADER IN CUSTOMER SATISFACTION. OUR POLICY IS ROCHESTER EXCELLENCE...CUSTOMER SATISFACTION, THE QUALITY JOURNEY CONTINUES. OUR VIEW OF OUR FUTURE, OUR VISION, IS COMPRISED OF FOUR SIMPLE STATEMENTS:

o CUSTOMER--THE FINAL ARBITER

o PRODUCTS AND SERVICES--FIRST WITH THE BEST

o QUALITY--EXCELLENCE IN EXECUTION

o PEOPLE--ENABLED, EMPOWERED, EXCITED, REWARDED

OUR VISION IS SUPPORTED BY SIX CRITICAL SUCCESS FACTORS (EDUCATION, REQUIREMENTS, PRODUCT STRATEGY, DEFECT REDUCTION, CYCLE TIME REDUCTION, EMPLOYEE INVOLVEMENT), ALL SHOWN ON THIS CARD, WHICH ARE IN CONCERT WITH IBM'S BASIC BELIEFS AND MARKET-DRIVEN QUALITY PRINCIPLES.

INCLUDED WITH THE SUBMITTED STATEMENT TO THIS SUBCOMMITTEE IS AN OVERVIEW BROCHURE ABOUT IBM ROCHESTER'S QUALITY APPROACH. LET ME HIGHLIGHT SEVERAL PROCESSES WHERE IBM ROCHESTER WAS RECOGNIZED AT OR NEAR WORLD CLASS.

CUSTOMER SATISFACTION: IT DEMANDS THE INVOLVEMENT OF CUSTOMERS THROUGHOUT THE BUSINESS CYCLE. OUR CUSTOMER INVOLVEMENT PROCESS ENSURES THE VOICE OF THE CUSTOMER IS HEARD VERY EARLY IN THE PLANNING PROCESS.

SUPPLIER PARTNERSHIPS, LIKE CUSTOMER PARTNERSHIPS, ARE CRITICAL TO CYCLE TIME REDUCTION AND PRODUCT QUALITY. EARLY INVOLVEMENT AND EDUCATION FOR OUR SUPPLIERS IN QUALITY CONCEPTS ARE KEY TO EFFECTIVE AND EFFICIENT PRODUCT DEVELOPMENT. AS AN EXAMPLE, IBM ROCHESTER IS ASSISTING OUR SUPPLIERS IN MALCOLM BALDRIGE ASSESSMENT TRAINING AND EVALUATION.

IN STRATEGIC PLANNING AREAS, SUCH AS METHODS OF MARKET SEGMENTATION, WE HAVE WORKED CLOSELY WITH LEADING UNIVERSITIES ON HOW TO USE LEADING-EDGE PLANNING THEORIES AND TECHNIQUES, THUS BENEFITING BOTH OURSELVES AND HIGHER EDUCATION.

EDUCATION OF EMPLOYEES ON A WIDE VARIETY OF TOPICS IS FUNDAMENTAL TO FOCUS ON QUALITY. WE OFFER EMPLOYEE EDUCATION ON EVERYTHING FROM ORGANIZATION TRANSFORMATION TO QUALITY TOOLS AND TECHNIQUES. IN FACT, IN IBM ROCHESTER, WE SPEND ABOUT FIVE TIMES THE NATIONAL AVERAGE ON EMPLOYEE EDUCATION, OR ABOUT 5% OF OUR PAYROLL. IN ADDITION, WE CREATE OPPORTUNITIES TO EXPAND OUR EMPLOYEES' DIRECT CONTACT WITH OUR CUSTOMERS, THUS INCREASING THEIR AWARENESS OF THE IMPORTANCE OF CUSTOMER SATISFACTION.

SINCE WINNING THE MALCOLM BALDRIGE NATIONAL QUALITY AWARD, WE ARE PLEASED AND PROUD TO SHARE OUR STORY. IBM HAS ESTABLISHED MARKET DRIVEN QUALITY INSTITUTES IN ROCHESTER, MN AND PALISADES, NY TO SHARE OUR MALCOLM BALDRIGE EXPERIENCE AND OUR CORPORATE MARKET DRIVEN QUALITY STRATEGY. WE ESTIMATE BY YEAR END 1991, ABOUT 10,000 PEOPLE WILL ATTEND FULL DAY QUALITY BRIEFINGS AT THESE LOCATIONS. IN ADDITION, IBM ROCHESTER IS HANDLING HUNDREDS OF CALLS PER WEEK, LARGELY FROM U.S. INDUSTRY, ON VARIOUS ASPECTS OF OUR QUALITY PROGRAMS. FORMAL AND INFORMAL BENCHMARKING ACTIVITIES WILL NUMBER IN THE HUNDREDS BY YEAR END 1991, ALLOWING FOR TWO-WAY COMMUNICATION BETWEEN IBM AND OTHER COMPANIES.

AS ARE OTHER BALDRIGE WINNERS, IBM ROCHESTER IS PROVIDING SPEAKERS FOR A WIDE RANGE OF CONFERENCES, SEMINARS, TRADE SHOWS, MEETINGS, ASSOCIATIONS, GOVERNMENT FUNCTIONS, AND EDUCATIONAL INSTITUTIONS, BOTH IN THE U.S. AND INTERNATIONALLY. I WOULD ESTIMATE THAT BY THE END OF THIS YEAR, WE WILL HAVE "TOLD OUR STORY" TO WELL IN EXCESS OF 100,000 PEOPLE. OUR QUALITY BRIEFINGS, EDUCATION, AS WELL AS OUR ADVERTISING IS DESIGNED TO SHARE OUR QUALITY TOOLS, TECHNIQUES, AND APPROACHES.

GIVEN THE COMMITTEE'S INTEREST IN THE RELATIONSHIP BETWEEN TOTAL QUALITY MANAGEMENT PRINCIPLES AND EDUCATION, I WOULD LIKE TO SHARE WITH YOU SOME OF OUR ACTIVITIES IN THIS AREA, GIVING SPECIAL FOCUS TO A NUMBER OF INITIATIVES WE HAVE GOING ON IN MINNESOTA. IBM HAS HAD A STRONG TRADITION OF EMPLOYEE EDUCATION WITHIN THE COMPANY SINCE 1933. THIS YEAR, ON ANY GIVEN DAY, SOME 22,000 IBMERS ARE IN CLASS AROUND THE WORLD. THAT REPRESENTS ABOUT SEVEN MILLION STUDENT DAYS PER YEAR AND AN ANNUAL INVESTMENT OF MORE THAN $1.1 BILLION. IN IBM ROCHESTER, EDUCATION OF EMPLOYEES WAS ONE OF SIX CRITICAL SUCCESS FACTORS NECESSARY TO ACHIEVE OUR GOALS.

IBM'S INVOLVEMENT IN EDUCATION EXTENDS BEYOND THE COMPANY TO K-12 AND HIGHER EDUCATION. IBM CHAIRMAN JOHN AKERS CHAIRS THE BUSINESS ROUNDTABLE'S EDUCATION TASK FORCE AND SERVES ON PRESIDENT BUSH'S EDUCATION POLICY ADVISORY COMMITTEE. IN ADDITION, IBM SUPPORTS MANY

EDUCATION INITIATIVES AND ENCOURAGES EMPLOYEE PARTICIPATION IN THESE PROJECTS.

WITH IBM ROCHESTER PARTICIPATION SINCE 1989, THE MINNESOTA COUNCIL FOR QUALITY, WHICH ESTABLISHED THE MINNESOTA QUALITY AWARD, HAS BEGUN AN EDUCATION INITIATIVE. THE PURPOSE OF THE INITIATIVE IS TO:

- IMPROVE CURRICULA TO INCLUDE QUALITY CONCEPTS.
- PROMOTE ACTIVE INVOLVEMENT OF ALL MINNESOTA EDUCATIONAL INSTITUTIONS IN THE QUALITY INITIATIVE.
- RECOGNIZE QUALITY IMPROVEMENT EFFORTS OF MINNESOTA EDUCATIONAL INSTITUTIONS.
- PROVIDE AN ON-GOING FORUM FOR EDUCATION AND BUSINESS LEADERS TO EXCHANGE IDEAS RELATED TO CONTINUOUS QUALITY IMPROVEMENT.

IN ORDER TO ESTABLISH A GENUINE PARTNERSHIP OF QUALITY IMPROVEMENT BETWEEN BUSINESS AND EDUCATION, SEVERAL MISSING PIECES MUST BE PROVIDED:

- A COMMON LANGUAGE OF QUALITY IMPROVEMENT MUST BE ADOPTED OR DEVELOPED. (SOME EDUCATORS, FOR EXAMPLE, MISUNDERSTAND AND VIEW WITH REPUGNANCE THE TERM "CUSTOMER".)
- COMMON MEASUREMENT TECHNIQUES MUST BE UNDERSTOOD.

- A COMMON FRAMEWORK FOR DESCRIBING THE INTERRELATED SYSTEMS AND DISCIPLINES OF QUALITY MUST BE ESTABLISHED.

- ALL PARTIES INVOLVED MUST GAIN VALUE FROM THE RELATIONSHIP.

- COMMON STANDARDS OF EXCELLENCE MUST BE PROMOTED.

TO THAT END, DURING 1991 THE MINNESOTA COUNCIL FOR QUALITY, AND TWELVE EDUCATIONAL INSTITUTIONS FROM K-12 THROUGH THE UNIVERSITY OF MINNESOTA, WILL PILOT SELF-ASSESSMENTS UNDER THE BALDRIGE-LIKE MINNESOTA QUALITY AWARD GUIDELINES TO ASCERTAIN:

- ARE THESE GUIDELINES APPROPRIATE FOR EDUCATION?

- WHAT (IF ANY) ADAPTATIONS AND MODIFICATIONS ARE REQUIRED?

- WHAT TRAINING MATERIAL AND EFFORTS ARE REQUIRED TO ASSIST EDUCATIONAL INSTITUTIONS TO PREPARE FOR THE AWARD PROCESS?

- WHAT CATEGORIES, EXAMINATION AND JUDGING PRINCIPLES AND CONDITIONS OF AWARD COMPETITION SHOULD BE ESTABLISHED?

THE APPROPRIATE SUPPORTING ORGANIZATIONS, INCLUDING IBM ROCHESTER, ARE PARTICIPATING IN THIS EXCITING EXPERIMENT. WE SHOULD HAVE AN INTERIM STATUS REPORT BY NOVEMBER OF THIS YEAR.

IN SUMMARY, WE ARE VERY PLEASED TO HAVE RECEIVED THE 1990 MALCOLM BALDRIGE NATIONAL QUALITY AWARD. MORE IMPORTANT, WE HAVE BENEFITTED FROM THE EXPERIENCE; THE APPLICATIONS, THE ASSESSMENTS, THE SHARING. QUALITY PAYS...IT IS ONE OF OUR BEST PRODUCTS. AT ROCHESTER, OUR REVENUE, PROFIT AND MARKET SHARE ARE GROWING WHILE OUR EXPENSES AND CYCLE TIME ARE DECREASING. OUR MORALE IS THE BEST IN IBM U.S. AND OUR PRODUCTS AND SERVICES ARE GLOBALLY COMPETITIVE. MOST IMPORTANT, OUR CUSTOMER SATISFACTION IS INCREASING.

ALTHOUGH WE IN IBM AND IBM ROCHESTER HAVE ALWAYS BEEN DEDICATED TO QUALITY AND CUSTOMER SATISFACTION, THE MALCOLM BALDRIGE NATIONAL QUALITY AWARD SHARPENED OUR FOCUS, PROVIDED A VEHICLE FOR SHARING, AND GAVE US A SUSTAINING DRIVE...ENABLING US TO REACH FOR OUR GOAL OF TOTAL CUSTOMER SATISFACTION.

THIS COMMITTEE, IN PARTICULAR, THE CONGRESS AND PRESIDENT REAGAN, HAVE OUR THANKS FOR ESTABLISHING THE MALCOLM BALDRIGE NATIONAL QUALITY AWARD AND STARTING THIS IMPORTANT AND BENEFICIAL PROCESS.

I WOULD BE HAPPY TO ANSWER ANY QUESTIONS YOU MAY HAVE.

LARUENCE L. (LARRY) OSTERWISE

VICE PRESIDENT, U.S. MARKET-DRIVEN QUALITY ASSESSMENT

IBM CORPORATION--PURCHASE, NEW YORK

MR. OSTERWISE JOINED IBM IN JUNE 1969 AND HAS HAD VARIOUS TECHNICAL ASSIGNMENTS IN APPLICATION INFORMATION SYSTEMS IN OWEGO, NY; AND ENDICOTT, NY, FROM 1969-1974. HE HAD MANAGEMENT ASSIGNMENTS IN ENDICOTT, NY; WHITE PLAINS, NY; AND ROCHESTER, MN FROM 1974-1983. THESE INCLUDED MANAGEMENT OF I.S., PRODUCTION CONTROL AND SITE OPERATIONS. HE BECAME ROCHESTER PLANT MANAGER IN JUNE 1984. IN FEBRUARY 1985, HE WAS NAMED GENERAL MANAGER OF THE IBM ROCHESTER FACILITY. HE WAS APPOINTED TO HIS PRESENT POSITION IN JANUARY 1991.

HE RECEIVED A BS DEGREE FROM DUKE UNIVERSITY, DURHAM, NC, IN 1969 AND AN MS DEGREE IN SYSTEMS AND INFORMATION SCIENCES, SYRACUSE UNIVERSITY, SYRACUSE, NY, IN 1973. IBM ROCHESTER WAS AWARDED THE 1990 MALCOLM BALDRIGE NATIONAL QUALITY AWARD.

LARRY AND NANCY OSTERWISE HAVE THREE CHILDREN, ELIZABETH, JEFFREY, AND CAROLINE.

Mr. VALENTINE. Thank you, sir.

Ms. Riley?

STATEMENT OF ROSETTA RILEY, DIRECTOR, CUSTOMER SATISFACTION, CADILLAC MOTOR CAR DIVISION, DETROIT, MICHIGAN

Ms. RILEY. Good afternoon, Mr. Chairman and members of the committee. I am Rosetta Riley, director of customer satisfaction for Cadillac Motor Car Division of General Motors Corporation. I would like to say that I am indeed honored to be here this afternoon, and I would especially like to thank the subcommittee on technology and competitiveness for this opportunity to speak with you as part of your hearing on quality improvement in America on a commendable and certainly highly critical initiative.

The main focus of my talk today is to share with you key points from the quality improvement process that lead to Cadillac winning the Malcolm Baldrige National Quality Award, and how these key success factors relate to your initiative and to other company's, and I daresay, the U.S. Government as well.

Before I get to that, let me say a few words about the Malcolm Baldrige Award itself. While only in its third year of existence, the impact of this competition, sponsored by the Commerce Department, has been nothing short of phenomenal. At Cadillac and at General Motors, we believe in what it stands for. We cherish its credibility. We recognize its value in turning a highly competitive self-analysis into improved operations, efficiency gains, and greater customer satisfaction. We know that it will serve as a rallying point for American industry to improve its competitive position in world markets.

Now, we didn't win our first time out. We came close in 1989, but fell short. But the benefits that we gained, even without the win, made all the effort worthwhile and gave us the encouragement to try again last year in 1990, and we are all glad that we did.

As many of you might know, we have been North America's luxury car leader for a long time now—as a matter of fact, for 42 years in a row. For many years, Cadillac retained this leadership position with very little challenge from the outside. Well, that's not the case anymore. The luxury segment is now the fastest growing segment of the automobile industry. To retain our number one ranking, it has taken nothing less than 100 percent commitment from each and every Cadillac employee. How did we get this level of commitment? Well that was something that the Malcolm Baldrige committee asked us, and we told them about the dramatic changes that have taken place at Cadillac over the last six years, about engineers, managers, manufacturing, personnel, line workers, UAW members, all working together in teams, about dealers and suppliers who are thought of as partners and members of the team, about a company-wide rededication to quality and excellence, with an eye toward continuous improvement in customer satisfaction.

To understand how this process came about, we need to look back a little in history, back to the early 1980s when we were all reeling from oil embargoes and economic recession. We were having serious difficulties adjusting to a rapidly changing market. We were still number one back in those days, but we were losing market share at an unprecedented rate, especially to our foreign competitors. We knew we had to make big changes and make them quickly.

By the mid to late 1980s, Cadillac and General Motors had achieved what many thought was impossible. We committed to a quality improvement process that required a complete reexamination of every aspect of our business. We moved to a team-based collaborative culture where employees are encouraged and empowered to participate in every aspect of the business. We changed our historically adversarial relationship with our unions to one based on partnershipping and common goals through the UAW/GM quality network process. We made our customers, both internal and external, the primary focus of our business, with achieving customer satisfaction, the driver behind everything that we do. We reassessed our processes and systems and created a highly integrated business process that gives our people and other stakeholders the necessary structures they needed to successfully accomplish our aggressive product goals and business objectives.

Then we redefine leadership. We turned our organization charts upside down to emphasize the supportive roles of our leaders. Our leaders no longer manage. They are now teachers, coaches, motivators and listeners who remove impediments, provide resources, and assure the effectiveness of our processes. We provide continuous education and training to our people to give them the tool that they need to be successful.

Some examples of these and other improvements that we've made at Cadillac over the past six years are as follows. J.D. Power Automotive Industry Customer Satisfaction survey data currently ranks Cadillac as the number one domestic manufacturer of automobiles, and we are ranked number four in the world. That is looking at the car over a 12 month period. We've been the top domestic auto maker and among the top five auto makers in the world for the past four years in a row. This represents a significant improvement from where we were back in 1985 when we were ranked number 16th.

We've experienced a 60 percent improvement in our quality, in particular with the Seville and El Dorado cars. Our cycle time has improved considerably. The time it takes us to change a line now has dropped from 8 to 12 hours, down to 3 minutes and 59 seconds, and we are now competitive with our Japanese competition. Although we increased our warranty coverage on our cars, and eliminated our deductible, our warranty costs have still fallen by 30 percent. Problems experienced by our customers during five years of ownership of our cars have fallen by 70 percent, and we are now competitive with our world class international target. Our customer loyalty has increased by 24 percent in a mere three years, and we now have the highest owner loyalty in the automobile industry.

I hope that this brief description of our process and some of its results have given you some insight into the quality improvement methods we have adopted over the last few years. We know we are not perfect, and the first time we start to think that we are, we know we will have lost because we must always strive for continuous improvement and we must never be satisfied with ourselves.

In summary, we feel that our biggest competitive advantage is our people, the American worker—pure and simple. There isn't a worker on the face of the earth that can match the intelligence and the ingenuity of the American worker. If we respect our workers and if we empower them and if we give them the tools and training that they need, there isn't anything that they can't accomplish.

In closing, let me say how honored we are to have received the Baldrige Award.

Thank you.

[The prepared statement of Ms. Riley follows:]

CONGRESSIONAL HEARING

ROSETTA RILEY ADDRESS

APRIL 23, 1991

DXVII:MSW470:1

ROSETTA RILEY

THANK YOU AND GOOD AFTERNOON.

I AM HONORED TO BE HERE. I'D ESPECIALLY LIKE TO THANK THE SUBCOMMITTEE ON TECHNOLOGY AND COMPETITIVENESS FOR THIS OPPORTUNITY TO SPEAK WITH YOU, AS PART OF YOUR HEARING ON "QUALITY IMPROVEMENT IN AMERICA." A COMMENDABLE INITIATIVE INDEED!

(PAUSE)

THE MAIN FOCUS OF MY TALK TODAY IS TO SHARE WITH YOU KEY POINTS FROM THE QUALITY IMPROVEMENT PROCESS THAT LED TO CADILLAC WINNING THE MALCOLM BALDRIGE NATIONAL QUALITY AWARD ... AND HOW THEY RELATE TO YOUR INITIATIVE AND TO OTHER COMPANIES AND, IF I DARE SAY, GOVERNMENT AS WELL.

BUT BEFORE I GET TO THAT, LET ME SAY A FEW WORDS ABOUT THE MALCOLM BALDRIGE AWARD ITSELF.

WHILE ONLY IN ITS 3RD YEAR OF EXISTENCE, THE IMPACT OF THIS COMPETITION -- SPONSORED BY THE COMMERCE DEPARTMENT -- HAS BEEN NOTHING SHORT OF PHENOMENAL.

AT CADILLAC, WE BELIEVE IN WHAT IT STANDS FOR. WE CHERISH ITS CREDIBILITY. WE RECOGNIZE ITS VALUE IN TURNING A HIGHLY COMPETITIVE SELF-ANALYSIS INTO IMPROVED OPERATIONS, EFFICIENCY GAINS, AND GREATER CUSTOMER SATISFACTION. WE KNOW THAT IT WILL SERVE AS A RALLYING POINT FOR AMERICAN INDUSTRY ... TO IMPROVE ITS COMPETITIVE POSITION IN WORLD MARKETS.

WE DIDN'T WIN OUR FIRST TIME OUT. WE CAME CLOSE IN 1989, BUT FELL SHORT. BUT THE BENEFITS WE GAINED -- EVEN WITHOUT THE WIN -- MADE ALL THE EFFORT WORTHWHILE, AND GAVE US THE ENCOURAGEMENT TO TRY AGAIN LAST YEAR.

I'M GLAD WE DID!

DXVII:MSW470:3

AS MANY OF YOU MIGHT KNOW, WE HAVE BEEN NORTH AMERICA'S LUXURY CAR LEADER FOR A LONG TIME NOW -- 42 YEARS IN A ROW AS A MATTER OF FACT.

FOR MANY YEARS, CADILLAC RETAINED THIS LEADERSHIP POSITION WITH VERY LITTLE CHALLENGE FROM THE OUTSIDE.

THAT'S NOT THE CASE ANYMORE. THE LUXURY SEGMENT IS NOW THE FASTEST-GROWING SEGMENT IN THE INDUSTRY. TO RETAIN OUR NUMBER ONE RANKING, IT HAS TAKEN NOTHING LESS THAN 100% COMMITMENT FROM EACH AND EVERY CADILLAC EMPLOYE.

AND HOW DO WE GET THIS LEVEL OF COMMITMENT?

WELL, THAT WAS SOMETHING THE BALDRIGE COMMITTEE ASKED US. AND WE TOLD THEM ...

ABOUT THE DRAMATIC CHANGES THAT HAVE TAKEN PLACE AT CADILLAC OVER THE LAST SIX YEARS ...

ABOUT ENGINEERS, MANAGERS, MANUFACTURING PERSONNEL, AND LINE WORKERS ... ALL WORKING TOGETHER IN TEAMS.

ABOUT DEALERS AND SUPPLIERS WHO ARE THOUGHT OF AS PARTNERS ... AND MEMBERS OF THE TEAM.

ABOUT A COMPANY-WIDE REDEDICATION TO QUALITY AND EXCELLENCE ... WITH AN EYE TO CONTINUOUS IMPROVEMENT ... AND CUSTOMER SATISFACTION.

(PAUSE)

TO UNDERSTAND HOW THIS PROCESS CAME ABOUT, WE NEED TO LOOK BACK A LITTLE IN HISTORY ... BACK TO THE EARLY 1980s ... WHEN WE WERE ALL REELING FROM OIL EMBARGOES AND ECONOMIC RECESSION.

WE WERE HAVING SERIOUS DIFFICULTIES ADJUSTING TO A RAPIDLY CHANGING MARKET.

WE WERE STILL THE NUMBER ONE LUXURY CAR COMPANY. BUT IN THOSE DAYS, WE WERE LOSING MARKET SHARE AT AN UNPRECEDENTED RATE -- ESPECIALLY TO FOREIGN COMPETITORS.

WE KNEW WE HAD TO MAKE BIG CHANGES ... AND MAKE THEM QUICKLY.

(PAUSE)

BY THE MID-TO-LATE 1980s, CADILLAC AND GENERAL MOTORS HAD ACHIEVED WHAT MANY THOUGHT WAS IMPOSSIBLE. WE COMMITTED TO A QUALITY IMPROVEMENT PROCESS THAT REQUIRED A COMPLETE RE-EXAMINATION OF EVERY ASPECT OF OUR BUSINESS. WE MOVED TO A TEAM-BASED COLLABORATIVE CULTURE WHERE EMPLOYES ARE ENCOURAGED AND EMPOWERED TO PARTICIPATE IN ALL ASPECTS OF THE BUSINESS.

WE'VE CHANGED OUR HISTORICALLY ADVERSARIAL RELATIONSHIP WITH OUR UNIONS TO ONE BASED ON PARTNERSHIPPING AND COMMON GOALS. WE MADE OUR CUSTOMERS, BOTH INTERNAL AND EXTERNAL, THE PRIMARY FOCUS OF OUR BUSINESS WITH ACHIEVING CUSTOMER SATISFACTION THE DRIVER BEHIND EVERYTHING THAT WE DO.

WE RE-ASSESSED OUR PROCESSES AND SYSTEMS AND CREATED A HIGHLY INTEGRATED BUSINESS PROCESS THAT GIVES OUR PEOPLE AND OTHER STAKEHOLDERS THE NECESSARY STRUCTURES THEY NEED TO SUCCESSFULLY ACCOMPLISH OUR AGGRESSIVE PRODUCT GOALS AND BUSINESS OBJECTIVES.

WE REDEFINED LEADERSHIP. WE TURNED OUR ORGANIZATION CHARTS UPSIDE DOWN TO EMPHASIZE THE SUPPORTIVE ROLES OF OUR LEADERS.

THEY ARE NOW TEACHERS, COACHES, MOTIVATORS, AND LISTENERS WHO REMOVE IMPEDIMENTS, PROVIDE RESOURCES AND ASSURE THE EFFECTIVENESS OF OUR PROCESSES.

WE PROVIDE CONTINUOUS EDUCATION AND TRAINING TO OUR PEOPLE TO GIVE THEM THE TOOLS THEY NEED TO BE SUCCESSFUL.

SOME EXAMPLES OF THE RESULTS OF THESE AND OTHER IMPROVEMENTS: J.D. POWERS' AUTOMOTIVE INDUSTRY CUSTOMER SATISFACTION SURVEY DATA CURRENTLY RANKS CADILLAC AS THE NUMBER ONE DOMESTIC MANUFACTURER OF AUTOMOBILES AND WE ARE RANKED NUMBER FOUR IN THE WORLD.

WE'VE BEEN THE TOP DOMESTIC AUTOMAKER AND AMONG THE TOP FIVE AUTOMAKERS IN THE WORLD FOR THE PAST FOUR YEARS IN A ROW. THIS REPRESENTS A SIGNIFICANT IMPROVEMENT FROM OUR SIXTEENTH PLACE RANKING IN 1985.

WE'VE EXPERIENCED A 60% IMPROVEMENT IN OUR QUALITY. OUR CYCLE TIME HAS IMPROVED CONSIDERABLY. THE TIME IT TAKES US TO CHANGE A LINE OVER HAS DROPPED FROM EIGHT TO TWELVE HOURS, DOWN TO THREE MINUTES AND FIFTY NINE SECONDS, MAKING US COMPETITIVE WITH OUR JAPANESE COMPETITORS.

ALTHOUGH WE INCREASED OUR WARRANTY COVERAGE, OUR WARRANTY COSTS HAVE FALLEN BY 30%.

PROBLEMS EXPERIENCED BY OUR CUSTOMERS DURING FIVE YEARS OF OWNERSHIP HAVE DROPPED BY 70% AND WE ARE NOW COMPETITIVE WITH OUR WORLD-CLASS INTERNATIONAL TARGET.

CUSTOMER LOYALTY HAS INCREASED BY 24% IN JUST A MERE THREE YEARS AND WE NOW HAVE THE HIGHEST OWNER LOYALTY IN THE AUTOMOBILE INDUSTRY.

I HOPE THAT THIS BRIEF DESCRIPTION OF OUR PROCESS HAS GIVEN YOU SOME INSIGHT INTO THE QUALITY IMPROVEMENT METHODS WE'VE ADOPTED OVER THE LAST FEW YEARS.

WE KNOW WE ARE NOT PERFECT. AND THE FIRST TIME WE THINK WE ARE, WE WILL HAVE LOST, BECAUSE WE MUST ALWAYS STRIVE FOR CONTINUOUS IMPROVEMENT. WE MUST NEVER BE SATISFIED.

IN SUMMARY, WE FEEL THAT OUR BIGGEST COMPETITIVE ADVANTAGE IS OUR PEOPLE ... THE AMERICAN WORKER. PURE AND SIMPLE.

THERE IS NO WORKER ON THE FACE OF THE EARTH THAT CAN MATCH THE INTELLIGENCE AND THE INGENUITY OF THE AMERICAN WORKER.

AND IF WE RESPECT OUR WORKERS ... IF WE EMPOWER THEM ... IF WE GIVE THEM THE TRAINING THEY NEED ... THERE ISN'T ANYTHING THEY CAN'T ACCOMPLISH.

IN CLOSING, LET ME SAY HOW HONORED WE ARE TO HAVE RECEIVED THE BALDRIGE AWARD.

THANK YOU, EVERYONE. AND NOW, I WELCOME ANY QUESTIONS YOU MIGHT HAVE.

Cadillac

BIOGRAPHY

ROSETTA M. RILEY

Rosetta M. Riley began her career at General Motors in 1983 at GM's Rochester Products Division in Rochester, New York, as Manager of Quality Assurance. There she successfully led the company's quality improvement efforts which catapulted the division to the top of its industry in a mere two years. Before joining General Motors, she was employed at the Bendix Corporation in the areas of strategic planning, finance and manufacturing.

In 1985, she joined the Buick-Oldsmobile-Cadillac Group as Manager of Quality Strategy Development with responsibility for the development of the Group's business planning process.

In rapid succession, she went from this position to Manager of Product Assurance for the Detroit Product Team. By February, 1987 she had been promoted Director, Customer Satisfaction for the newly formed Cadillac Motor Car Division, which was a consolidation of the Detroit Product Team and Cadillac Marketing Division.

At Cadillac, Riley led the development and implementation of Cadillac's total company-wide quality improvement process and, led Cadillac's efforts to become the first automobile manufacturer to win the Malcolm Baldrige National Quality Award.

Ms. Riley has a bachelors degree in economics and statistics and advanced degrees from UCLA in economics, mathematics and statistics.

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Mr. **Valentine**. Thank you, ma'am.

Dr. Reimann, do you think that the, let me say before I ask the question, I preface the question by the fact that to say to you that I have been impressed by what these winners have said. This is a situation where, in my opinion, as a member who didn't really have all that much to do with the initiative which brought about the award, so this was a kind of a sleeper. I think maybe this is the wrong way to characterize it, but I think that this rose from a sense of frustration and has blossomed into a beautiful flower that most of us didn't expect. We are not here to pat ourselves on the back. We are not here as a subcommittee of Congress, one that is proud of its part as an institution in the genesis of this award, but we are here to try to encourage others to participate and to find ways to make it better, and to create more winners and to find more ways to spread the joy, so to say.

Dr. Reimann, do you believe that the award at this point is having the impact that was intended, and in your opinion, are any legislative changes in order? I believe that I detected a feeling of frustration in the voice of at least one of the participants that said please don't change that form too much. Congress is—we tamper with things sometimes when we shouldn't. Could you give us a minute for your judgments whether or not we should—what we should do, if anything, at this point?

Dr. **Reimann**. I think the award is having an impact, a great deal beyond what we expected, of the type we expected, but much beyond it. I think that a tremendous credit goes to these award winners who have brought an energy to this whole national effort beyond our wildest expectations. I feel a factor of ten to a factor of fifty over what we anticipated they were likely to do when we were discussing this about four years ago. So I think that aspect of the Award has worked extremely well. We have had involvement of all sectors of people from perhaps 40 or so States so far. Our examination team has also taken the message back through their State and local networks, and we are seeing this multiplier effect. So, I think that there was a reservoir of perhaps belief that something should be done, but there wasn't a vehicle for doing anything. And I think the Award represents that vehicle and it has unleashed a great deal of energy in the private sector, and now in the Government sector and the non-profit sector, and so on. So yes, we are pleased.

I think we are probably fairly close to the point of making recommendations for change, but I think that we ought to have our evaluation board, the board of overseers, look at the whole pattern of responses now which has turned upward dramatically in the last year to see if any fine tuning is needed. By and large, they believe not in terms of the substance of the legislation. The only area that comes up very often is this question of categories and that opens up many issues regarding resource levels, the availability of people to do a competent evaluation, the kinds of costs that might be borne by those organizations in applying.

For example, a small school wouldn't have the resources available of a small business to carry the fee structure that has worked very well in this Award. So, we don't want to rush ahead in the notion that an award is a cure for everything, and perhaps set in motion some things that might turn rather negative. Rather, I would encourage the tremendous efforts on the part of the award winners and our board of examiners to work within their communities. The example of Minnesota was already cited here, where they are doing a pilot effort involving education. These are people that we work very closely with right from the first, indeed, also an effort in North Carolina as well. We are looking to those efforts to build the kind of infrastructure that will guide us to the right choice here in the not too distant future.

But right now, I would say that the processes are working very well and I think we ought to let them settle a bit before any bold new strokes.

Mr. **Valentine**. I might say that the difference is the independents of certain departments in General Motors has been fairly well known. The Buick division and Cadillac, I was not that well aware of the divisions which existed in IBM, for example. It seems to me that the success of the Cadillac Division or the success of IBM Rochester provide great examples of what part of a large giant international corporation receiving this recognition can do internally. I mean, you should be able to turn that in to something really special where it could result in special remuneration for those who wanted to really put out within the structure of the vastness of those two corporate institutions.

Dr. Reimann, is it time now for the Congress to begin to try to find ways to extend this type of competition into areas of education, health care, and government?

Dr. **Reimann**. I think yes, but I believe that there ought to be very careful consideration to the timing and to the structure of that, and not simply carry over the concepts one to one, except for the basic idea of a set of defining criteria, which we would assume would be directly derived from the criteria that are useful in business. Because these businesses are now working through their communities within organizations of these types, and we are finding the criteria to be readily adaptable to those means. So, they represent a communication device.

I think that our board that advises us here is concerned that in the establishment of the award in 1987 and in the funding of it in 1988 through a foundation, that America's business leaders who were contacted regarding funding felt that there was an award for business, a new prestigious award for businesses, and that was the basis for the fund raising and indeed the rapid growth of the award certainly strains that foundation level as well. To extend that into other categories where the funding issues would be different ones, I think requires some thought and we are trying to work that through our board of overseers now.

I don't think there is any question regarding the basic point of the adaptability of these concepts to all our institutions. I think the answer to that is a resounding yes. The best strategy to do it competently, without creating a kind of frenzy atmosphere requires some thought, I believe.

Mr. **Valentine**. When I became better acquainted with the success of this initiative, I began to be asked questions by some people who were in the business and industrial press about some real or imaginary problems concerning examiners and people who held themselves out as consultants. Am I correct in understanding that it would be possible for an individual or a company to work for a business as consultant in one classification and one area, and that same individual be an examiner in another area?

Dr. **Reimann**. Yes. This is a peer-based system and it was anticipated, and we feel it was implicit in the law itself, that in a peer review, the participants on the board of examiners would come from the population of U.S. businesses that are interested in quality, and therefore there would be an overlap. So the whole design of the evaluation system represented a strategy to keep that system honest.

Mr. **Valentine**. When I understand that in the event that Cadillac were to want to employ consultants who were familiar with the process, that the consultants who would advise Cadillac could appear as examiners in the situation where Mr. West's company was involved.

Dr. **Reimann**. Yes, that would be possible. In that review then, if that situation didn't pertain, but if it did, that person, let's say, would receive no information at any point regarding Cadillac or any of its competitors, and to merely ask about or receive information on the status of it would be a serious violation of our rules.

So, these conflict of interest rules have been very carefully thought out. We regard this as kind of impenetrable. We know of no parallel anywhere in the review in the world of anything that is as carefully done and where the rules are so well monitored throughout the entire process. Remember now, there are no secret Baldrige answers. The fact that, let's say, Cadillac's consultant is familiar with the Baldrige process, confers no advantage to Cadillac, they will not know what Cadillac will be asked in a site visit because what they are asked in a site visit is tailored to Cadillac's strengths and weakness, as viewed by our examination team. Therefore, there is no preparation in the sense of, here is what they are going to ask you, that would be possible. Nor are there secret Baldrige answers. I think if you pursued some particular line, whether it be human resource development or engineering application, and so on, you will find that these four companies are not look-alikes. There are no Baldrige answers.

The team of evaluators has to determine whether the techniques and their applications are effective to the pursuit of the company's objective, and not whether they are look- alikes or standardized. None of that is done. I think there is a public misunderstanding of that. There is a belief somehow that there are magical answers, and I think this is a reflection of the state of quality in the United States, that while these people have been given high marks to the award criteria, to some, these are well beyond anything they have ever seen before and to a certain extent there is a tendency to believe that somehow or other, there are simple answers to these questions, and that the examiners know the answers. If the examiners then tell these answers to the companies that this confers some advantage.

You can't rehearse an institution of 6,000 people to say something that isn't true in terms of the way the company is actually being managed and our teams of examiners are experienced and very careful to make sure that they understand the complete story of what's going on within a company, what results they are getting, what their processes are. This is a very exhaustive process. You use the word rigorous in the law and if you didn't want it overdone, you should not have given it to the National Institute of Standards and Technology.

Mr. **Valentine**. We gave it to you because we knew of all of the available institutions of Government, that you could handle it like Caesar's wife, above reproach.

I don't mean to—we pay a dear price for freedom of press in this country, and press people can say anything they want to. I would not want anybody to believe to infer from that statement that I think there is anything wrong. I wanted you to feel free to tell us if there are ways that you think that process can be improved, either publicly or write us a letter. We are interested in removing from this situation insofar as we can, anything that any individual, even if it is a warped perception, could perceive as any kind of impropriety.

Well, there are a lot of other questions, but I think I will come back to that later. I don't want to sit here and ask all the questions. I want to recognize my colleagues who thought enough of you and us to come and participate with us.

We will recognize the distinguished gentleman from Pennsylvania, Mr. Ritter.

Mr. **Ritter**. Thanks, Mr. Chairman.

First of all, let me congratulate all of you again for making every effort to do the right thing right the first time and spread the good word.

A company like Federal Express has won the award corporatewide. A company like IBM won it for its Rochester, Minnesota division. GM won it for its Cadillac division. Let me ask, how successful is, for example, General Motors, in spreading the Cadillac experience as far as it can, knowing that it also has Freemont, California experience on the new project, knowing that it also has such an experience. How do you go about doing that?

Ms. **Riley**. As part of our winning the Malcolm Baldrige Award, our obligation is to go out and spread the word to American companies, but we are also doing the same thing in General Motors, to all General Motors divisions. One of the things that we were struggling with earlier was how should General Motors go about going for the Malcolm Baldrige Award. Should it go division by division which would take an awful long time, and plus most General Motors' divisions do not meet the guidelines because most of their product is sold the parent company.

What we are looking at now is the possibility of two things. One is, how does General Motors as a corporation go for the Malcolm Baldrige Award, or do we chop it up into the three main groups which would be BOC, Buick/Oldsmobile/ Cadillac, CPC, Chevrolet/Pontiac/Canada, or the components group, which one of those groups should go after it. Rather than trying to do it a division at a time which would take years for General Motors to get through that, but we have started classes at General Motors about a year ago. We started classes in the Malcolm Baldrige process—how to do an assessment; understanding the guidelines; how to assess your company. We've also taken the Malcolm Baldrige process and correlated with our targets for excellence process that we use with our suppliers, and we are finding there are strong similarities. So we factored everything in the Baldrige process that's not in our normal processes, factored it in, and it has become part of the quality improvement process at General Motors.

So, there is a tremendous effort going on and I can say that I was downtown yesterday, up on the famous 14th floor, talking on this very same subject—how should General Motors go about it, what is the approach.

Mr. RITTER. Could you describe the influence that going for the Baldrige Award has had on the relations between management and labor, given the very, in the past, adversarial relations between the UAW and the automobile industry.

Ms. RILEY. It has, of course, had a tremendous relationship. We had already started recognizing back in 1985 as a company that if management and union did not form a partnership and work on quality together and agree on the importance of customer satisfaction, we would, in effect, go out of business. We could not survive as a vital business. So, we formed what is called the UAW/GM Quality Network and that is an agreement between General Motors and its union that we would work jointly, we call it jointly, on quality and customer satisfaction, and we would let nothing get in the way of us achieving our quality and customer satisfaction objectives.

Now, as for applying for the Baldrige Award, the UAW was part of that process. They were part of the 30 member team that we put together to work on the application. UAW leaders actually signed the application, along with the general manager of Cadillac, and they have been an integral part of the turnaround of Cadillac, as well as the Baldrige process.

Since we've won, what that has done in our plants among our people, does the Baldrige award say that we are at the end of our journey? No, it certainly does not. It does validate our processes and systems and what it has done is made our people winners, and they behave like winners. They are translating this good feeling that they have gotten from winning the Baldrige award to value in our products which means value to our customers.

Mr. RITTER. How do you share the experience, say, between the Cadillac division of Freemont operation, the Nummi operation which kind of was first out of the starting gate with quality for GM, and Saturn, which in and of itself has been a remarkable experience? How do you—do you talk to each other?

Ms. RILEY. Yes, we do. As a matter of fact, Nummi, which is the joint venture between General Motors and Toyota, most executives at General Motors, we go out there several times and we've been out there several times to try to understand and learn the Japanese manufacturing process. As a matter of fact, myself, I've been there six times just to study their manufacturing systems. There is a tremendous exchange of information and knowledge that is going on, both with Nummi and with Saturn.

With respect to the Baldrige process, we have been asked to come out and talk to the folks at Nummi and I think we've already done that one, about how we turned Cadillac around in order to allow us to win the Baldrige Award. Of course, we are doing the same thing with Saturn Corporation.

Mr. **Ritter**. I just want to comment to my colleagues. It is just remarkable how the Baldrige process turned companies around. It turned Cadillac around. It turned Brand X/Ford Motors around. Ford Motors in 1980 lost $1.9 billion. It turned Xerox around. It made a global competitive giant out of Milliken, in one of the toughest, most competitive industries—the textile fiber industry. On and on and on, it is a remarkable experience.

Question for Larry Osterwise. The Minnesota Quality Council, or some such, is that a group of leaders in the Minnesota business and education and government community, and are they appointed by the governor? Is that how that works, or how do they get together?

Mr. **Osterwise**. No, it was an initiative that was begun in a partnership with government and business, and shortly thereafter, with education. It is not an appointed council, but rather a membership council with contributing membership fees for the businesses in particular.

Mr. **Ritter**. We, just a week ago, in legislation, kind of following up on the Baldrige Award success, passed an amendment in the subcommittee that would create a national quality council. It would be funded similar to the Baldrige Award with NIST doing the coordination. It would have in it people like the John Akers of this world, the Roger Millikens, the Bob Calvins, and Dave Kerns and Fred Smiths of Federal Express, and perhaps a Wallace or two from the small business, and people from education and Government. The idea would be to set goals for America—not standards, no mandates—but to just up the ante for the country on the way to realizing that America needs the cultural change, not just Cadillac employees or IBM Rochester employees, or Federal Express or Wallace employees, or any one of the 180,000 companies who are at differing levels of approach to this quality revolution.

It seems that from the President on down, the chairman of the board and CEO of the world's largest customer, American's largest customer for goods and services, and probably America's largest provider of goods and services that we should have for ourselves and for the Nation, some view of the future that is a quality future and a quality culture. How do you respond to something like that?

Mr. **Osterwise**. Well Mr. Ritter, I think that is an excellent idea, particularly as it is coordinated with NIST, such that it doesn't go at cross-purposes, but rather is supportive.

In an organization as large as IBM, for example, we would have a quality steering committee in Rochester. We would have one at the IBM U.S. level, we would have one at the IBM level, and I see no reason why the United States shouldn't have one. To this point of establishing very aggressive goals and sharing the best practices, I think that is the key to our success.

In fact, the Baldrige process, one thing that you learn, is that there are three fundamental things that you've got to focus on: approach, deployment, and results. And to have that council share the best approach, then enable full deployment throughout U.S. industry.

Mr. **Ritter**. There is a lot of not-for-profit; there is a lot of Government; there is health care; there is universities which we will hear from shortly.

Mr. OSTERWISE. Then to focus on very aggressive results, I think we have been far too easy. We lack demanding goals. We've picked up, particularly from Motorola on the 10X improvement over the next two years, kind of thing, and then 100X the next two, henceforth and so on. That's caused us to change our views, and like the comment that you made earlier, it has caused sharing to dramatically increase, because one division of IBM cannot look at another division and say, not invented here. If you are trying to make a 10X improvement, in the words of Roger Milliken, you are willing to steal shamelessly from anyone who has a good idea.

Mr. RITTER. The Japanese nation has made a practice out of it and have been very successful at it. NIH does not for quality performance make, not invented here. I am not in the National Institutes of Health.

[Laughter.]

Mr. OSTERWISE. At any rate, I think the setting of those goals, and in fact, the formulation of a United States' vision is very important, and then some key actions.

There is a self-proclaimed futurist by the name of Joel Barker who has the following phrase. He says, "Vision without action is merely dreaming. Action without vision is simply activity." But vision and action together can change the world, and indeed I think a quality council formulated with the Baldrige Award would pull it all together and can bring that vision and the actions to change our competitiveness in the world.

Mr. RITTER. Any other comments? That seems like a fitting way to end my time Mr. Chairman.

Mr. VALENTINE. Thank you.

The Chair will recognize—

Mr. RITTER. By the way, just a special commendation. That gentleman there was the plant manager of that Rochester division and I know John Akers, chairman of IBM, deserves lots of credit, but this is a guy who as in the front lines, and I am glad to see they promoted you. Hopefully your successor will do as well.

Mr. OSTERWISE. Your comment to Ms. Riley about how do you spread it throughout a large organization, that is part of my new role.

Mr. RITTER. Great.

Mr. OSTERWISE. Thank you.

Mr. VALENTINE. Don, he hasn't moved to your district has he?

Mr. RITTER. We have a thing called quality valley USA which I helped to found which is like your Minnesota Council by regional in the Lehigh Valley of Pennsylvania, and Curt Reimann knows it well. You would be very welcome there.

Mr. OSTERWISE. I am speaking to Bethlehem Steel in a couple weeks, as a matter of fact.

Mr. VALENTINE. Darn, I didn't intend to start all that up.

The Chair recognized the distinguished lady from Missouri.

Ms. HORN. Thank you, Mr. Chairman.

I had the wonderful opportunity to hear Ms. Riley give recently a full presentation in St. Louis to a group of business people and I also had the opportunity to meet with one of your examiners just last Saturday who works in the District and learned a lot more about the program.

I am also very interested in seeing the concept disseminated as widely and quickly as possible, and thought I would ask a couple of questions. There have been indications that some States and localities and regions that are doing similar kinds of things, obviously not calling it the same thing. Is there a listing of what States are getting into this, how they are doing it, any kind of a model or of local areas?

Dr. **Reimann**. Yes, though I would have to confess that the information is somewhat fragmentary because of the fast pace that these organizations are now moving at out there. A snapshot a week from now would look very different. There are a number of States that are now moving very quickly and forcefully in the quality area—about 10 or so more this calendar year over last year.

We can provide you with that information, but bear in mind it is fast moving and undoubtedly incomplete because of the scope of that networking now taking place across the United States. We are hearing about some new ones almost every day of the week.

Ms. **Horn**. That would be appreciated, and perhaps through the subcommittee and then we could have wider dissemination, of course with the understanding that it is a dynamic process and that is good. I know I have people in both our State and our region who are very interested in a model or a—have you put together a model other than just your getting back what others are doing? Has anyone had the opportunity to say, here is what a State might do or what it might look like, or region?

[The information referred to follows:]

NIST
UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899

May 8, 1991

Honorable Joan Kelly Horn
United States House of Representatives
Washington, D.C. 20515-2502

Dear Ms. Horn:

This information is in response to your question regarding state activities in quality. As I mentioned at the April 23 Hearing on the Malcolm Baldrige National Quality Award, networks are being created all over the U.S. I'm sure we don't learn about all of them when they are formed. For this reason, our list should not be regarded as complete.

I appreciate your interest in the Baldrige Award.

Sincerely,

Curt W. Reimann

Curt W. Reimann
Director for Quality Programs

Enclosures

06/03/91

STATE AWARDS - STATUS

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ST	CONTACT NAME	TELE. NO.	ADDRESS	CITY	ST	ZIP	STATUS
AR	Jan Portein	501-682-7327	Arkansas Industrial Development Commission Quality Productivity Task Force 1 State Capitol Mall	Little Rock	AR	72201	7/6/89: No award & no plans to develop one. Instead will highlight quality work being done by industries in state through their bimonthly newsletter. Ms. Alice Rumph Smith (Ark. Sci. & Tech. Auth.) is interested in MBNQA as a model for state award. Her add.: 100 Main St., Suite 650, Little Rock, AR 72201. Tele. 501-371-3554
AZ	Peter Cunningham	602-542-5371	Asst. Dir., Arizona Dept. of Commerce Int'l Trade & Investment 1700 W. Washington St.	Phoenix	AZ	85007	7/5/89: Nothing now, on Cunningham's agenda
CA	Herb Wiese	818-566-1111 or 818-847-6641	Lockheed, Box 551, Dept. 10-20	Burbank	CA	91520	2/8/91: also working with Peter Joachin. Plans are toward an industry award with government and education being included as eligible to apply. Plans still in early stages.
	Kenneth J. Farrell	213-333-2130	Xerox Corporation 101 Continental Blvd. (ESXC-16X)	El Segundo	CA	90245	
	Peter Joachin	408-256-6667	IBM, 5600 Cottle Rd.	San Jose	CA	95193	7/5/89: Early planning stages. Senator Geramondi is primary mover for this state award. Award coordinator to be named soon.
CO	Larry Allen	303-673-6230	2270 S. 88th St.	Louisville	CO	80028-5286	3/8/90: Info. provided by Prof. Tom Boardman, CO State Univ., Fort Collins, CO (303-484-5767) who is also on the committe "Colorado State Quality Award Development Com.". Still in early stages. Purpose would be to recognize those organs. within CO, both public & private, that successfully implement the principles contained in the Malcolm Baldrige National Quality Award guidelines.
CT	Sheila Carmine	203-322-9534	P.O. Box 1396	Stamford	CT	06904-1396	AWARD IN PLACE. Adopted MBNQA format. First

ST	CONTACT NAME	TELE. NO.	ADDRESS	CITY	ST	ZIP	STATUS
							Award 1988.
GA	John Vinyard	404-421-8520	1395 Marietta Parkway Building 500, Suite 100	Marietta	GA	30067	4/3/91: Interested in working with others to establish a state award. No activity currently in place.
IA	Mark Steinberg	800-274-8223	Iowa Valley Community College IVCCD Box 536	Marshalltown	IA	50158	7/10/89: He is Secretary for the Iowa Quality Coalition.
	Mary Jo McElmeel	515-623-3845	Diamatic Box 130	Montezuma	IA	50171	9/25/89: She is Awards Committee Chairperson for the Iowa Quality Coalition.
	Romulus E. McCoy, Jr.	712-277-6200	Plant Manager AC Rochester 1805 Zenith Dr.	Sioux City	IA	51103	9/25/89: Have established Iowa Quality Coalition. Ron is Acting President, and Mark Steinburg is Secretary. Plan to base on Baldrige criteria with some modification. This is an outgrowth of what was the Iowa Productivity Consortium. Governor actively participating with the executives.
IL	Mary C. Wright	708-234-4924	658 Pine Court	Lake Bluff	IL	60044	3/21/91: In very early planning stages. The process will be similar to the Malcolm Baldrige National Quality Award and they are using the Minnesota Quality Award as a state model. Plans are to offer one award per year in each of the following categories: manufacturing, service and small business. The small business category is for companies having fewer than 200 employees.
KY	Jerry Pierce	502-227-6591	Center of Excellence for Quality	Frankfort	KY	40601	4/17/91: Beginning work toward a state quality award based on Baldrige Award. Will have another planning meeting in May. Goal is to present first awards in 1992. Has support of the Economic Development Cabinet.
MA	Dennis Morgan	508-762-1797	35 Village Rd.	Middleton	MA	01949-1202	3/19/91: In early stages of development.

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			Rm. 7212				
MD	Dr. Thomas Tuttle	301-403-4535	Maryland Center for Quality & Productivity College of Business & Management University of Maryland	College Park	MD	20742	7/13/89: The Senate Productivity Award in 1989 will be entitled Productivity & Quality Award. In 1990 looking toward the title Quality & Productivity Award. Senator Sarbanes a very strong supporter. Ms. Mikulski has also joined in support. They use volunteer judges. Contact in Sarbanes' office is Charlie Stek (202) 224-2662.
	Richard Pierce	301-827-7618	Route 3 Box 91	Queenstown	MD	21658	Organizing businesses on Eastern Shore.
	Robert Loughead	301-956-2217	359 Berkshire Dr.	Riva	MD	21140	Working with Richard Pierce.
ME	Jennifer Vachon	207-623-4568	126 Servall St.	August	ME	04330	4/30/91: AWARD IN PLACE. Modeled after Malcolm Baldrige National Quality Award. This is first year for the Award. There were over 100 applications distributed and 5 applications received. Winners (if any) will be announced in the fall. Same 3 categories as the Baldrige, but the Small Business category is for businesses having 100 full time employees or less.
MI	Katherine Rowley	313-370-3120	Continuing Education Oakland University	Rochester	MI	48309-4401	Michigan state DoC using Baldrige criteria internally. In very early stages of planning. Others on this Planning Council for the Michigan Quality Award for Business & Industry are: Jack Boruget, John Cleveland, Gerry Darnell, Maureen Heaphy, Don Nordman and Allen Rae. Plans are to use the Malcolm Baldrige National Quality Award as a blueprint.
MN	Jim Buckman	612-851-3181	Minnesota Council for Quality 2850 Metro Dr., Suite 633	Bloomington	MN	55425	4/3/91: AWARD IN PLACE. First awards will be given in 1991. This is a not-for-profit

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							group. Will give out 5 individual awards for excellence in service quality. Have trained 140 examiners. Have received 40-50 applications. Category awards are - 2 lge. mfg., 2 small mfg. Are having pilots to apply to show applicable to government and education categories as well.
MO	Stan Harger	314-553-3406	8000 W. Florissant Sta. 3406	St. Louis	MO	63136	4/24/91: In early stages of planning
	Steven Detter	314-232-4192	P.O. Box 516 - Mail Code: 3063025	St. Louis	MO	63166	4/24/91: In early stages of planning
NC	Donna Rosefield	919-733-4856	North Carolina Quality Leadership Foundation P.O. Box 10711	Raleigh	NC	27605	11/12/90: AWARD IN PLACE. Governor James Martin has program in place. Plan to have first awards in 1991.
	Dr. William A. Smith	919-737-2362	Box 7906 North Carolina State University	Raleigh	NC	27695	
	Fred L. Eargle	919-737-2358	Box 7902 North Carolina State University	Raleigh	NC	27695-7902	
NJ	Dom Facchini	201-430-8550	c/o Public Service Electric & Gas Company 80 Park Plaza, MP-15 P.O. Box 570	Newark	NJ	07101	5/28/91: Proposal developed and presented to NJ Commissioner of Commerce & Economic Development
PA	Ralph J. Barra	717-624-3899	Barra International P.O. Box 325	New Oxford	PA	17350	7/12/89: Nothing now. Expects something to start in a couple of years. Area Councils active. Erie has its own quality award.
RI	Guy L. Marini	512-835-8588	Box 2323	Pawtucket	RI	02861	12/3/90: Want to start a program on statewide level.
TX	Jim Ziaja	512-835-8588	CompuAdd 12303 Technology Blvd.	Austin	TX	78727	4/91: Working with Pamela Moore.

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ST	CONTACT NAME	TELE. NO.	ADDRESS	CITY	ST	ZIP	STATUS
TX	Pamela Moore	214-407-4108	17304 Preston Rd., Suite 300	Dallas	TX	75252	4/16/91: Working with Jim Zieja. Plans are moving along in effort.
VA	Ms. Elizabeth Ingold	703-891-0106	U.S. Senate Productivity Award for Virginia 567 Whittemore Hall	Blacksburg	VA	24061-0118	11/6/90: Do not have a state quality award, but use the Senate Productivity Award with criteria that address quality issues.
WA	Paul J. Steel	206-453-4963	PACCAR, Inc. Corp. Director of Quality 777 106th Ave., N.E.	Bellevue	WA	98004	7/6/89: Seattle Area has formed a support group of major industries, Seattle Area Quality Network (SEQIN). First conf. Apr. 1990.
WY	Barbara Nelson	307-777-7286	Off. of Economic Development & Stabilization Board Herscheler Building, 3rd Floor East	Cheyenne	WY	82002	6/26/90: AWARD IN PLACE. 5 on panel. Gave first award 1988. Simpler than MBNQA. Promotes exports.

Dr. **Reimann**. About two years ago, we published a paper indicating what sort of key activities State and local groups, trade groups, professional groups, and so on, and the strategy of bringing people into the program gives first priority to their personal competence, but after that we try to get people in from different organizations and different regions of the country. We encourage them, through our board of examiners, and give them information, slides, view graphs, and so on, to carry the word to their local communications. That is probably how you were contacted by, I would assume, Stan Harger from Emerson or something like that.

Ms. **Horn**. Yes, we met with Stan.

Dr. **Reimann**. We consider them to be our 400 gorilla band out there carrying the message for quality. They have been very effective in the Minnesota Council and the North Carolina effort and in about 25 other States, people from the board of examiners then take the concepts of the Baldrige award and adapt them. But in addition, we are seeing trade groups and professional groups and so on carry the message.

So, what we try to do is encourage locales to really develop networks that capture the capabilities within that network. For example, in some cases the spearhead would be a Chamber of Commerce, and in others it would be a professional association. The case that Larry Osterwise mentioned before was a state business partnership, but then reaching out to bring in new entities. We feel that is the wave of the future in this movement because much of the resources are going to be local and giving these communities a common language in the form of quality excellence criteria where there can be local mutual reinforcement, I think, represents the best way to use the scarce resources. But there is currently no orchestration of that.

For example, we've been reluctant to encourage States to create an award because the States may not have the wherewithal and the base of people that could really pull it off. So, we feel that they ought to develop a model that is appropriate for them, and then we will make available all of our resources in the form of training materials and so on, and guidance and usually visits—either we visit there or they visit here—it works both ways. So, we've been helping with many of these efforts, but we have been reluctant to say what those efforts should be because you really have to understand the way the State or local entity works in order to help engineer it.

So, what we try to do is give some general models such as trade associations, what they can do, professional associations, State and local entities, and so on. So, we've been providing these types of services to State and local networks, often by way of universities. That is the other reason why we want to get universities involved in this.

Ms. **Horn**. Another area, it occurs to me, especially with smaller companies, that perhaps some kinds of progress commendations. This is a long process and looking at the application can be daunting. Companies who get into this, and we talked about Cadillac, it was a five year program, who are perhaps smaller and perhaps don't have the immediate reinforcement or the long range reinforcement of their own workforce and their own managers, and perhaps even seeing some bottom line kinds of things. Has there been any thought about that. It really would be another layer or level, but just to kind of keep them moving forward by having some kind of interim progress, not award even, but you are really on track, things look really good after year one, and we commend you and keep going forward, sorts of things.

Dr. **Reimann**. The companies all get feedback reports and in that they would be able to monitor their progress. The subject of alternative recognition comes up from time to time in our evaluation groups, advisory groups, counsel against it because it would, in effect, would make the recognition part of the award system look somewhat easier.

On behalf of the smaller businesses, I believe we are going to see some of the most outstanding examples coming out of the small business community. I think Wallace represents an example of that. They haven't been at it, it hasn't taken the five to ten years, though I guess five years ago they were starting to move into it, but I believe these smaller companies are going to be able to move much more quickly. As we go around the country now, we see many examples of smaller businesses taking a very aggressive posture and believing that within a couple of years, they will be able to make major changes. They've made a believer out of me in many cases.

I should note that this year the small business participation is the highest participation of any sector in any of the four years of participation. So, that represents a major growth area. I believe that the inspiration from being able to accomplish great quality turn-abouts in two to three years will, I think, spark the small business community. But there are a number of efforts to reach small businesses and we are trying to look at strategies down through business assistance programs, trying to encourage State and local small business assistance organizations to add quality to their base of information that they make available to help small businesses.

Ms. **Horn**. As a point of clarification, a company gets the application and they can send it in completed. They cannot send it in on an interim basis, can they? They can send it in and say, "Sorry, you are an also-ran this year," and that gives them feedback, but there is nothing in between. Or is there?

Dr. **Reimann**. No, there is nothing in between, but nationally now, we see many instances of self-assessment workshops spring up. I mentioned before that thousands of people have already been trained. I believe that this is going to provide very much of that, in fact I was at a conference here a couple of days ago and one company proudly put up on the slide for all to see that they had done an assessment and they got 239 points out of 1000 which would be way back in the Baldrige pack. But nevertheless, they were saying look, we've done this first step and we are going to move forcefully and in three years we see ourselves challenging for this award.

So, out there, there are many organizations that are now carrying out self-assessments or working through other organizations and getting self-assessment training, and getting at least a reading. The issue isn't whether it is 239 points. The point is that they should be able to at least determine where their strengths and weaknesses lie, and to be able to do something about it. I think that when that occurs, some of the sort of sense of when and how to make best use of the Baldrige Award process, as opposed to making use of the criteria—I think that will shake out within the community itself. That is an education campaign that I think is succeeding basically with its own momentum now.

Ms. HORN. Thank you, Al. I will look forward to getting that other material. Thank you, Mr. Chairman.

Mr. VALENTINE. Thank you.

Mr. Rohrabacher, before you ask your first question, to say the example that you gave advertising the fact that you scored what, 200 or 300 out of one thousand, it is like the politician saying that he matriculated at State college. Mr. Rohrabacher.

Mr. ROHRABACHER. Thank you, Mr. Chairman. Just to digress before I ask my first question, my family, we had a Cadillac once, Ms. Riley, and I never forget that it was big thing for my family to have a Cadillac and the first thing I did was I got my finger caught in the door. I notice that I hope you didn't get your finger caught in the door of one of your Cadillacs.

Ms. RILEY. It was a door but not a Cadillac.

Mr. ROHRABACHER. I would just like to ask one question and perhaps ask for just a brief answer from each one of the panelists.

Is our education system producing the students that are equipped to make sure that in your particular industries, we are going to be able to produce the high quality and competitive products that we need in the next decade?

Ms. RILEY. At General Motors, when this question came up, we had some discussion on it and really didn't have to spend very much time on it because we basically think that the human resources that are coming to us now are not prepared. The entry level workforce is not prepared to survive in today's workplace. The youngsters coming out of universities basically are very well trained in technical and theoretical job skills. But in the areas that will help us achieve our aggressive quality objectives, there is very little training. These skills for us would be interpersonal skills, team building skills, how to manage and live in diverse organizations or how to manage diversity, communications skills, also statistics, problem-solving skills, analytical skills—all of those things we find are very, very critical to the success of the individual, the employee, success of the team and success of Cadillac as well as General Motors.

Because young people do not have these skills coming in, we do extensive training. We have training in each of our divisions and Cadillac certainly includes—we have our own training organizations, training departments, and we also work with the universities. Once we hired employees, we send them back to the universities for further training in courses that we help select. But basically, our position is that right now the entry level workforce that we are receiving are not prepared for the workplace of the future.

Mr. ROHRABACHER. And what about the workforce in terms of your actual employees who work on the line?

Ms. RILEY. Those coming in? Again, same problem. Not quite prepared because the days of coming in and just working on the line, starting in General Motors or at Cadillac, the same day that you show up and working on the line, we don't do that anymore. Our employees are required to go through extensive training. Our manufacturing plants are very, very complex now. They have to work around robotics, different levels of automation, and different technologies, and these people have to be prepared. So, we do intensive amounts of training in our plants.

One of our strategies is reducing variation in our products and processes which means that even the hourly worker must understand statistics, charts, problem-solving skills. We use a problem-solving process throughout General Motors called a five-step problem-solving process that requires every employee to be able to identify problems and do his own analysis. And if he reaches a point where he needs help, he has to be able to know where he is at that point to ask for help. We are finding that we have to train our people in these skills.

Mr. ROHRABACHER. So you're—if I could summarize your answer—you're saying that both at the manager level and in terms of the employee level and manufacturing level, the young people are not prepared by the education system without a great deal of further training to handle the current responsibilities that you need.

Ms. RILEY. Exactly.

Mr. OSTERWISE. I guess at the outset I should say I believe there is a tremendous diversity in education across the United States, and generally there is an exception to any rule, if you will. I think there is a tremendous focus on the education community on the question that you just asked as well.

Having said all of the above, however, at this point I do not believe that we have the focus, particularly on the math and sciences, required to be internationally competitive. That is clearly why IBM's number one external initiative is in education and John Akers sits on the President's advisory council, and as chairman of the National Business Roundtable Committee on Education, and all of the initiatives throughout IBM with local communities, including the one I mentioned in Minnesota with the Council on Quality in a Baldrige-like assessment. It is clear that much more needs to be done.

Rosetta's comments on the interpersonal skills I think are well placed as well. I see initiatives in school districts across the United States now to talk about, even at the elementary school levels, on group learning, including group evaluations which is heretofore uncharted waters, if you will. There are many initiatives and a significant amount of investigation going on, but almost like the quality journey, we have a long way to go before we are clearly in good stead and competitive in that area.

Mr. ROHRABACHER. So you would say that along with the group skills that seem to be lacking, but also you would place a real underscore, you would underscore the need for mathematic training?

Mr. OSTERWISE. Mathematics and science, yes, clearly. Statistics.

Mr. ROHRABACHER. Mr. West?

Mr. WEST. In our case it is somewhat different. Our biggest single category of workers are our first line couriers who are basically drivers and people who pick up and deliver packages. So, they have been trained very well by and large to drive. Now, the question is, of course, where did they get their education on driving and it probably wasn't from the universities or the high schools, except maybe for a course. So, we would have to answer that we get a very good product, although to put things in perspective, we also have the luxury of having many people waiting in line to get on board at our company.

So we have for instance in the pilot group alone, we have 6,000 pilots outside Federal Express waiting to get on board at Federal Express to fly for our airline. So, we might have a different situation than most or many people do in that regard.

I would say in general, from that what I hear and see, the education system is not necessarily giving us what we need, but my expertise in terms of specifics sort of falls short.

Mr. **Rohrabacher**. Do your people have the skills at reading and writing and being able to comprehend the forms that are necessary to do the job, or do you do extensive training in that once your people get there.

Mr. **West**. By and large, they have the skills to the point that we need the skills. I would say if you asked for skills in terms of grammatical correctness and writing letters to customers, those people are very hard to find. But then again, we don't need that many.

Mr. **Rohrabacher**. Okay. Thank you.

Mr. **Spiess**. We find that we've raised the standards in our industry as far as the type of people that we bring on. But by and large, in Texas and Louisiana, the educational systems are not providing the type of people that we need. You have school districts, and I am talking primarily Texas today, that is loaded with bureaucracy and that is one of the reasons that I would love to see the Baldrige criteria spread across the breadth of education because we need to have a focus on human resources the teacher. We need to have leaders instead of managers and bureaucrats in the school districts that hamper what goes on.

We had an opportunity recently in Texas to address those issues and we failed miserably. We just took and threw billions of dollars at the problem. The end result is that we are still going to have the same problem, it is just going to be more expensive.

Mr. **Rohrabacher**. What would you have those schools produce that they aren't producing now? What skills don't these potential employees have that they need?

Mr. **Spiess**. Math, science, a whole awareness of what quality is for the United States and what it does. I have a heck of a time explaining it to my own children. The good news is that I'm involved in a lot of the school districts and I do work with some of the boards of education and so forth, and they are beginning to get some understanding of the Baldrige criteria and what it means. But there is not an understanding of the competitive issues in this country that filters into education, and why we are in the mess we are in. I think that we need to start at the lowest levels of education and it needs to be grounded to our curriculum such as English and Math, all the way up.

The good news is that the universities are catching on. The University of Texas and the University of Houston are moving those directions rather rapidly, and I am glad to see it. It is a little late, but I'm glad to see it. But it has not caught in the high schools and junior highs to the level that it should.

Mr. **Rohrabacher**. I think it is fascinating to note that from what I understand, that the Japanese certainly have their children in the equivalent of high school and below work much harder than our children do, however, universities, I understand, and colleges, that just isn't the case. Maybe you would like to have one comment. And I'm sorry I can't stay for the next panel, Mr. Chairman. I've got a meeting with some constituents in my district, and I understand that the next panel's topic is we are going to have educators and so I apologize for not being able to stay for that after I've asked this question, but I have really appreciated the answers.

Dr. **Reimann**. I've heard the same thing regarding the Japanese. I don't have enough experience to say how exactly that plays out, but certainly there is a tremendous emphasis in the early years in what is our grade school and high school. From all accounts, the Japanese students then when they go into the workplace, are prepared to pick up the skills that adapt to a particular work environment. In other words, there isn't a lot of effort then of remediation to get them to the point where they can begin to understand the skills needed for the workplace. They have a sense of the problem-solving and continuous learning that carries over comfortably into the work environment.

I think repeatedly we are hearing from our business associates here, people that participate in the award program, that much of the training and an increasing amount of the training they have to do is really remediation to bring employees to the point where they can begin to learn the skills on the job. So that would appear to be a deficiency in the education system and in work attitudes, and represents I think a hidden cost that is without a doubt significant.

Mr. **Rohrabacher**. Well thank you very much, and Mr. Chairman, I appreciate you having this hearing and providing leadership on this issue. I'm sorry that I can't stay for the next panel. Thank you very much.

Mr. **Valentine**. Thank you, Mr. Rohrabacher.

Just one or two more questions and we will go to the next panel. I don't want to ask any of you to disclose anything about your business operations that would be improper, but it was a matter of some interest, Ms. Riley, has the advertising campaign been successful? Automobile manufacturers, it seems to me, always are quick to point to we won the car in driver award and that sort of thing. Has this been a big deal?

Ms. **Riley**. Winning the Malcolm Baldrige Award and the advertising that followed, first let me explain what our strategy was. Immediately after winning the Baldrige Award, our ad company did a survey sampling across the United States to get an understanding of how well the Baldrige Award was known. The statistics came back that very, very few people in the U.S. were aware of the Baldrige Award, and those who were familiar with it didn't understand what it was.

So, we made a strategic decision to raise the awareness of the U.S. with respect to the Baldrige Award, in hopes that more companies would apply, in particular, more companies that supply to General Motors. We think that we have been quite successful in terms of raising the awareness. We get quite a bit of correspondence from the heads of a lot of companies indicating that they are aware of the Baldrige Award because of the ads. That is the primary reason for the advertising campaign, was to raise the awareness. General Motors is not in a position to demand from its suppliers that they apply for the Baldrige Award, but we hope by raising the awareness, that they will put this into their business plans and actually go out and apply. And many of our suppliers have done just that.

Mr. VALENTINE. Have any of the other companies who won the Award use this in your advertising, and if so, to what extent?

Mr. OSTERWISE. Yes, Mr. Chairman. We have, at IBM, to a lesser extent certainly, but we have in our education and communication and in our advertising, focussed on the tools and the techniques, the sharing aspects of quality and thus there are a series of ads running that talk about the people of IBM and the importance of people to quality, and single out and mention IBM Rochester as a Malcolm Baldrige National Quality Award winner.

Mr. VALENTINE. Mr. West?

Mr. WEST. Well, in our business, our customers' main question is, it's nice you won the Baldrige Award yesterday, but what have you done for us today. So, we've been very soft. We do have a Baldrige ad, but we play it very seldom, to my knowledge.

Mr. VALENTINE. Mr. Spiess?

Mr. SPIESS. We're very soft on advertising. I guess one of the beautiful facts of representing or servicing the petro-chemical industry is that they do a lot of advertising for you, so in our case, a lot of our customers are thrilled that we won the award and they are advertising the fact that one of their suppliers had achieved that level of success.

Mr. VALENTINE. At the end of the five-year waiting period, would each of you apply again?

Mr. SPIESS. Yes, sir.

Mr. VALENTINE. Mr. West?

Mr. WEST. Yes, I think we would.

Mr. VALENTINE. Mr. Osterwise?

Mr. OSTERWISE. We are seeking the award as an IBM Corporation in the next go-around, prior to the five-year period, I would hope.

Mr. VALENTINE. Ms. Riley?

Ms. RILEY. I think for Cadillac, we would love to apply again, but like IBM, I think we will have other General Motors groups that will be in line ahead of us.

Mr. VALENTINE. The application fee is manufacturing company category, $3,000; service company category, $3,000; small business, $1,000; supplemental sections, $1,500. Are those initiation fees enough to pay the costs to finance the operation?

Dr. REIMANN. Not really. I think that the biggest factor in making the books balance really is the tremendous level of volunteer efforts. If you actually tally up the true cost of what an evaluation, these companies for example all received last year, upwards of 500 hours of evaluation a piece at various stages of the review and development of the feedback report. So, the fees don't come close to paying for that, but most of our people in the Award program contribute their time and services free, or at a very small honorarium, so that makes the whole—that plus the foundation support— makes the whole thing balance out. But we are very deeply indebted to volunteers as the single biggest contributor.

Mr. **Valentine**. Well of course, I could go on and on and on, but all good things have to come to an end. We do appreciate your coming here, each of you, and we appreciate the effort that into the preparation of the testimony. We appreciate the effort that the companies represented by you lady and gentlemen expended in participating in the process. We do not want to, as we say down south, to fiddle around with the thing and mess it up. We want to improve it. We think we have kind of stumbled onto something that works. If things occur to you, I know none of you ever have this feeling, but in my other life I was a country lawyer and I used to make my best arguments to the North Carolina Supreme Court when I was in the car going back home. So, if you think of anything you wish you had said to us, please write us a letter.

Thank you all very much.

The next panel consists of Dr. Frank Huband, executive director, American Society for Engineering Education; Dr. Iris Carl, president of National Council of Teachers of Mathematics, Washington, D.C. both of those persons; and finally last but not least, Mr. Edward R. Maclosky, director of human resources at Lehigh University, Bethlehem, Pennsylvania. We thank you all for coming. If you would favor us by summarizing your statements you've prepared. The statements will appear in the record as presented.

Dr. Huband?

STATEMENT OF FRANK HUBAND, EXECUTIVE DIRECTOR, AMERICAN SOCIETY FOR ENGINEERING EDUCATION, WASHINGTON, D.C.

Mr. **Huband**. Thank you, Mr. Chairman. As you noted, my name is Frank Huband. I'm executive director of the American Society for Engineering Education and I want to thank the committee for its invitation for my testimony.

My message is a proposal to extend the concept of the Malcolm Baldrige National Quality Award to higher education, which has been alluded to and which I think will be alluded to by the subsequent speakers on this panel.

It is not precisely the central topic proposed for the panel, which was inclusion of the mathematics of quality principals in school curricula, however, I will indicate to you, I hope, in my brief remarks, not only the independent value of the proposal I am going to make, but also its strong relevance to the topic that you initially proposed.

The impact of the Baldrige Award, as we have heard in the initial panel on American industry has been enormous. In the first years of the Award, a substantial number of corporate leaders who could see the need and potential of quality management to their companies dedicated their firms to the arduous and expensive task of total commitment to quality management principals. The numbers I have heard on the order of hundreds of millions of dollars, $150 million for Xerox for the training and so forth—a huge commitment. Those few who won the award became additionally committed, both in their own enthusiasm and by the terms of the

Award, to spreading the concept of quality management to other companies. Bob Galvin of Motorola, in particular, announced that any vendor wanting to continue to do business with Motorola, had to participate in the Baldrige Award process.

In the few years, the concepts of quality management have spread through the American manufacturing community, probably the single most visible Government program that I can remember in my lifetime at such a low cost. It is a very nominal cost and a tremendous impact. I propose that this same process can happen in higher education and specifically in engineering education.

The first question one might ask is do we have a need for quality assurance and engineering education. Higher education in the United States and particularly engineering education, is rightly the envy of the world. However, to quote my former colleague, Dr. John White, assistant director of engineering at the National Science Foundation, and an early proponent of a Baldrige-like award for engineering education, "How long would a firm be in business if it rejected parts, materials and subassemblies at an overall rate of 35 percent, and rejected a critical component at the rate of 65 percent?" Not very long I would think. But this it the situation that we face today in engineering education. Of those students who declare they want an engineering major, 35 percent never get an engineering degree. From under-represented groups, this figure is 65 percent. This would be a serious waste of capability under any circumstances, but it has become a critical problem in the 1990s when the percentage of under-represented minorities among high school graduates is growing, and student interest in engineering as a career is declining. Also, voices from industry criticize the match of knowledge and skills of current engineering graduates with their needs as engineering employers.

There are, of course, a lot of things going on today to try and enhance engineering education, but I would suggest that one way to accelerate this transformation and to broaden participation is to create a total quality management award for engineering schools. As with the Baldrige Award for corporations, I believe many engineering college deans and their university administrators would be willing to commit their institutions to the identification and pursuit of quality measures. I think in particular, there are schools that are looking for new students that are seeing declining enrollments would identify the Baldrige approach as one way of attracting students to their programs as indicia of the quality that they can provide to the students.

I also believe that once the initial awards were announced, the resulting visibility of the winners and the clarification of both the process and value of academic total quality management would lead to a landslide of participation in the following years.

Although my background and responsibilities lead me to propose an award for engineering colleges, a successful program would require participation of the entire university in total quality management. Given that this is the case, perhaps the scope of the award should be university-wide.

One principal goal of total quality management is identification of the customers of the enterprise and their needs, and developing measures which quantify the degree of achievement of these customer needs. One customer of university education is, of course, the student. Others might include the employers of engineering graduates, the faculty and society at large.

The challenge for those who would implement a program such as the one suggested here is the establishment of these measures and their implementation. We might have different categories in the process for doctoral institutions, undergraduate schools, perhaps public versus private institutions, and again we would hope that winners would be encouraged to widely represent and promote the strategies for their success.

I promised at the beginning of my presentation that I would tie the proposal to the initial theme of the panel. I believe that unless universities have first-hand experience with total quality management from their own livelihood that they really will not be able to prepare their students to implement that philosophy. A mere understanding of the mathematics of total quality management is totally inadequate.

I've spoken informally with both Allan Bromley, the President's science advisor, and Lamar Alexander, Secretary of Education, about this proposal, and John White has spoken with the NSF Director, Dr. Massey, and all of these have expressed enthusiasm with this process. I think NSF might be interested in being a sponsor or an overseer of this activity.

Just as the Baldrige Award has excited the imagination of U.S. corporations, I believe a counterpart program for institutions of higher education, particularly in engineering, could enhance the effectiveness of these institutions which are so critical to our Nation's welfare. Thank you.

[The prepared statement of Dr. Huband follows:]

QUALITY IMPROVEMENT IN AMERICA

Testimony before the

U.S. House of Representatives

Subcommittee on Technology and Economic Competitiveness

by

Dr. Frank L. Huband
Executive Director
American Society for Engineering Education

April 23, 1991

Mr. Chairman and Members of the Subcommittee:

My name is Frank Huband and I am Executive Director of the American Society for Engineering Education. I would like to thank this subcommittee for the opportunity to talk with you today. My message, a proposal to extend the concept of the Malcolm Baldridge Total Quality Management award to higher education, is not precisely the central topic proposed for this panel, which is inclusion of the mathematics of quality principals in school curricula. However, I hope I will indicate to you in my brief remarks not only the independent value of the proposal, but its strong relevance to that central topic. The views I am presenting today are my own.

The impact of the Baldridge award on American industry has been enormous. In the first years of the award, a substantial number of corporate leaders, who could see the need and potential of quality management to their companies, dedicated their firms to the arduous and expensive task of total commitment to quality management principles. Those few who won the award were committed, both from their own enthusiasm and by the terms of the award, to spreading the concept of quality management to other companies. Several of the award winners announced that any vendor that wished to continue to do business with them had to participate in the Baldridge award process. Thus, in the space of a few years, the concepts of quality management have spread throughout the American manufacturing community.

I propose that this same process can happen in higher education, and specifically in engineering education.

The first question one might ask is "Do we have a need for quality assurance in engineering education?" Higher education in the United States, and particularly engineering education, is rightly the envy of the world. However, to quote my former colleague Dr. John White, Assistant Director for Engineering at the National Science Foundation and an early proponent of a Baldridge-like award for engineering education, "How long would a firm be in business if it rejected parts, materials and subassemblies at an overall rate of 35 percent and rejected a critical component at a rate of 65 percent?" Not very long, I would think.

But this is the situation we face in engineering education. Of those students who declare an engineering major, 35 percent never receive an engineering degree. Among students from under-represented minority groups, the figure rises to 65 percent. This would be a serious waste of capability under any circumstances, but it has become a critical problem for the 1990s when the percentage of under-represented minorities among high school graduates is growing and student interest in engineering as a career is declining. Many voices from industry also are criticizing the match of knowledge and skills of current engineering graduates with their needs as engineering employers.

There are, of course, a number of major efforts underway to revitalize and transform engineering education, focusing new attention on the undergraduate experience and nurturing the talent of our students rather than finding reasons to winnow them out. But I would suggest that one way to accelerate this transformation and to broaden participation is to create a total quality management award for engineering schools. As with the Baldridge National Quality Award for corporations, I believe many engineering college deans and their university administrators would be willing to commit their institutions to the identification and pursuit of quality measures. I also believe that once the initial awards were announced, the resulting visibility of the winners and the clarification of both the process and value of academic total quality management would lead to a landslide of participation in following years.

Although my background and responsibilities lead me to propose an award for engineering colleges, a successful program would require participation of the entire university in total quality management. Given that this is the case, perhaps the scope of the award should be university-wide.

One principal goal of total quality management is identification of the customers of the enterprise and their needs, and developing measures which quantify the degree of achievement of these customer needs. A principal customer of university education is, of course, the student. Others might include the employers of engineering graduates, the faculty, and society at large. The challenge for those who would implement a program such as the one suggested here is the establishment of these measures and their implementation. As with the Baldridge award, there might be different categories of award, such as one for doctoral institutions, and another for predominantly undergraduate schools. And winners should be required to widely promote their strategies for success.

I promised at the beginning of my presentation that I would tie this proposal to the central theme of this panel. I believe that unless universities have first-hand experience with total quality management they would be unable to prepare their students to implement its philosophy. A mere understanding of the mathematics of total quality management would be inadequate.

I have spoken informally with both the President's Science Advisor, Allan Bromley, and Secretary of Education Lamar Alexander about this proposal, and both have expressed substantial initial enthusiasm.

Just as the Baldridge quality award has excited the imagination of U.S. corporations, I believe a counterpart program for institutions of higher education--particularly in engineering--could enhance the effectiveness of these institutions which are so critical to our nation's welfare.

Once again, thank you for the opportunity to discuss this issue. I would be happy to answer any questions.

Frank L. Huband is executive director of the American Society for Engineering Education. Previously he served as division director for electrical and communication systems at the National Science Foundation, as well as head of the NSF technology policy section. Prior to his tenure at NSF, Dr. Huband was both an attorney advisor at the Federal Energy Administration and an assistant professor of electrical engineering and mathematical sciences at Rice University.

Dr. Huband holds a doctoral degree in electrical engineering from Cornell University and a Juris Doctor degree from Yale University Law School.

STATEMENT OF DR. IRIS CARL, PRESIDENT, NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS, WASHINGTON, D.C.

Dr. **Carl.** Thank you. Mr. Chairman and members of the House Subcommittee on Technology and Competitiveness, we want to thank you for including the National Council of Teachers of Mathematics in these presentations this afternoon.

I am Iris Carl. I am president of NCTM and I am vice chair of the Mathematical Sciences Education Board at the National Research Council. In my real life, I am director of mathematics of the Houston Independent School District in Texas, on leave to be president of the council.

The NCTM is the largest organization of its kind in the United States, with a membership of 85,000 who have been the driving force of preparing standards for school mathematics.

The documents that we have created are the Curriculum and Evaluation Standards For School Mathematics, and the Professional Standards for Teaching Mathematics. Both of these documents provide a blueprint for excellence in teaching mathematics, and they serve as a mathematics model, if you will, for quality management.

The Curriculum and Evaluation Standards For School Mathematics presents a vision of what mathematics should be taught in our Nation's schools, and how it should be an exciting and interesting and useful tool for living. The Professional Teaching Standards addresses what teachers should do in order to make this happen for youngsters.

In producing these documents, we challenge the responsibility of all parts of the mathematics education systems and the greater society in providing these opportunities for our children, so that it will be every child in America who will have the value of a quality mathematics education. Quality in this sense is very critical to our goal in making it a reality.

The statistics that we face in American schools today are most distressing. One of the things that we have found is that annually, of the 3.5 million youngsters who enter our schools, one-third of them are placed in the lower track for failures, just based on their socioeconomic data that meets the schools. Over 50 percent of the schools in our urban school districts boast drop-out rates that we should not tolerate. We find that in some measure, the early sorting and the negative tracking that occurs produces the drop-outs.

The international assessments of educational achievement and the levels that show the United States at the bottom of all the industrialized countries, shows that there are changes that need to be made, and in essence, what we should be about is the business of praising excellence and rewarding excellence so that those who are in our schools and teaching our children will be able to master the complexities of our times.

Mr. Chairman, the total quality management is a tool for continuous improvement. It is a philosophy that is providing leadership, training and motivation to improve organization management and operation. It is a program that encompasses the recognition that quality is of value, rather than simply the absence of a defect. It focuses on prevention and the involvement of everyone across the entire process and it involves feedback to improve the process.

What we address here is that in our schools across the Nation, the majority of them show that 25 to 28 percent of the youngsters drop out. This occurs within those grades 1 through 12. But we also find that the data provides us with significant evidence that of the 75 percent of the youngsters who have dropped out of school who return to get general education development certificates, 50 percent of those least successful of those in our schools are successful in meeting high school requirements through a program that they are motivated to attend. It is the failure of current practice in the school that sends a 25 year old to a GED program to make up the education that they lost in their first opportunities.

We find that the standards embody the belief that every child can and needs to learn mathematics. This belief is embedded in our philosophy that mathematics is a gateway to preparing our citizens for the next century. Mathematics is, in another way of looking at it, is really the tool that will help us to become a Nation of problem-solvers. The standards get the students more actively involved in using the mathematics that they learn so that they are understanding by doing. What they have as an example, in the middle grades as recommended in the standards is to take advantage of the youngster's keen interest in trends in music, sports, music and fashions, and allow those students to have the experience of using their mathematics to gather these data, analyze them, interpret them, and then display them in graphs and charts that are meaningful to them and their peers, but also show that they have grasp a fair knowledge of the mathematics that they have learned.

We find that the NCTM, through our belief in using our standards to design curricular models for schools, will be able to excite young people to remain in mathematics and become competent. This we hope will help to reduce the sense that some children cannot learn math or cannot participate in the regular programs. How we know that just improving the class environment will not change how a child values mathematics is through our experience in working with the youngsters at all levels. We need to reach out into our communities to create a sense of family that will involve the greater society, or rather math-anxious society, I may note, to become more involved in making this happen for youngsters.

The NCTM has learned from the second international study where we were compared to the Japanese and other highly industrialized nations, and we either 12th or 14th out of the 15 countries involved, that what we are doing wrong is dragging arithmetic and computation skills throughout our grades from kindergarten through high school, and never affording youngsters an opportunity to learn probability, statistics, and the other current topics that should be included in mathematics. And, for this reason, our curriculum and evaluation standards focus on four processes; one, problem solving; second, mathematical reasoning; that youngsters should be able to communicate mathematically; and they should most important of all be able to make those connections between the mathematics that they are learning and other topics in mathematics, but also between mathematics and the other subject areas.

The professional teaching standards for mathematics focus on youngsters being able to learn cooperatively or in teams, if you will, and that they learn by doing mathematics, as opposed to pencil and paper drill and practice, and that they have an opportunity to use mathematical models to make the math that they learn come alive.

Unlike many programs of school reform, our program does not center on a few of our NCTM members who may be considered the best or the brightest, but rather in fact what we are about is using the total mathematics community to make that difference.

Mr. **Valentine**. Dr. Carl, could I interrupt you just a moment. Our colleague from Pennsylvania, Dr. Ritter, he has a constituent that would like to make a few remarks here. We will come right back to you.

We would appreciate it if you could summarize. I misunderstood you. I thought you wanted to do something now. If you could proceed please, ma'am, but if you could summarize we would appreciate it.

Dr. **Carl**. The NCTM has used over 40,000 teachers in its ranks to make critical decisions about what we should be including in our standards. We've also gone through focus groups that include the greater society, parents, scientists, and others. We realize that it took us five years to complete these standards, but five years of diligence in committing ourselves to a quality product that will look at what this Nation needs to be focussed to make a difference in mathematics.

The NCTM is presently working on disseminating these documents to build awareness and also to implement the recommendations that have been made. The NCTM standards for quality mathematics is going to be continued in a developmental stage as we evolve over this decade to make mathematics a reality for all boys and girls. We have been developing review processes and evaluating our standards program for ourselves, and we are producing other documents that will focus on excellence for the next several years.

Total quality management, as a title, may or may not be a management tool for the Nation's industries over the next several years, but may be the idea that it embodies will remain, and it is the idea of finding examples of excellence and holding them up to the Nation so that we can learn from what is new in education.

The U.S. Department of Education has been searching for examples using effective schools in their blue ribbon schools project, and in science and mathematics, the Presidential Awards program recognizes those teachers throughout the States and territories. Both of our programs have created networks for these teachers to build so that they can support the improvement of instruction.

The NCTM project will adapt over the years as it unfolds. The quality education for every child will not occur unless we all work together in recognizing excellence, supporting our schools with adequate funds, creating opportunities for teachers to learn more about their profession, and reaching out into our communities to emphasize the importance of excellence in education.

We look forward to working with you and the Congress in making the goal of quality mathematics education a reality for every child.

Thank you.

[The prepared statement of Dr. Carl follows:]

THE TESTIMONY OF

IRIS CARL

PRESIDENT

OF THE

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

BEFORE THE

HOUSE SUBCOMMITTEE ON

TECHNOLOGY AND COMPETITIVENESS

CHAIRED BY

THE HONORABLE

TIM VALENTINE

APRIL 23, 1991

Mr. Chairman and members of the House Subcommittee on Technology and Competitiveness, I am Iris Carl, President of the National Council of Teachers of Mathematics (NCTM), Vice-Chair of the Mathematical Sciences Education Board, and Director of Mathematics for the Houston Independent School Board in Houston, Texas. I am here today representing the NCTM, the largest mathematics education association in the United States with over 85,000 members. NCTM's members were the driving force in creating the CURRICULUM AND EVALUATION STANDARDS FOR SCHOOL MATHEMATICS, which was released in 1989, and the recently released, PROFESSIONAL STANDARDS FOR TEACHING MATHEMATICS. Both documents present a blueprint for excellence in teaching mathematics.

The CURRICULUM AND EVALUATION STANDARDS FOR SCHOOL MATHEMATICS presents a vision of what mathematics should be for our nation's school children; an exciting, interesting, and useful tool for living. The PROFESSIONAL STANDARDS FOR TEACHING MATHEMATICS spells out what teachers need to know in order to teach towards the new goals for mathematics education and how teaching should be evaluated in order to improve. In producing these documents, we challenge all who have responsibility for any part of mathematics education to use these standards as a basis for discussion. Mr. Chairman, NCTM's goal is a quality mathematics education for every child.

Quality is critically important if we are to turn our goal into a reality. The statistics on American children present a distressing picture. Over fifty percent of the school children in our urban school districts will drop out before they complete high school. Today, another forty girls below the age of sixteen will deliver their third child. International assessments of education achievement levels show the United States at the bottom of most charts in comparison with other industrialized nations. While many students are learning everyday at each grade level; the fact is that as a democracy and an economy we need to praise those who are mastering the complexities of our time, and reach out to those who are not.

Quality

Mr. Chairman, Total Quality Management (TQM) is a tool for continuous improvement; in that it is a philosophy for providing the leadership, training, and motivation to improve an organization's management and operations. It is a program that encompasses: the recognition that quality is a value, rather than simply the absence of defects; it focuses on prevention; and the involvement of everyone across the entire process; and it involves feedback to improve the process.

Mr. Chairman the NCTM STANDARDS project is an example of a total quality management program. The STANDARDS embody the belief that every child can and needs to learn mathematics. This belief is embedded in our philosophy that mathematics is a tool for problem-solving -- not just the old word problems in textbooks that asked "if one plane left San Francisco at 1:00 traveling at 400 mph, ... and another plane... at what time would they cross paths." But problems of today, such as having students in grades 5-8 who generally show a keen interest in trends in music, movies, fashion, and sports, gather data in these areas and display them in charts. This is to get the students more actively involved in using and understanding information.

NCTM believes that by using the STANDARDS to design a curriculum schools will be able to excite more younger children to mathematics. This we hope, will help to reduce the sense of many children that they cannot learn and that

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they cannot participate in school. However, we know that just improving the classroom environment will not change how a child values an education. We need to reach out into the community and create a sense of family and community education. We know that in homeless shelters, just a few blocks from Capitol Hill, children are trying to learn their lessons, and other children are teasing them -- even while their tutors are present. The challenge is daunting; but not beyond our reach.

Creating Quality

Unlike many programs of school reform, our program does not center on a few members of the NCTM, and a few representatives of other organizations. It involves tens of thousands of teachers who review and critique the draft documents. This development process has debunked one key myth that the development of STANDARDS needs to be done by some small group of the "best and the brightest" and then presented to a larger group. For NCTM, the "best and the brightest" were a part of the process, we just had many more of them submitting ideas and comments. Some of our discussion meetings involved over four thousand teachers sitting in the same room debating and discussing the strengths and weaknesses of sections, wording, and over arching strategies. The point is that it took over three years. Mr. Chairman quality and commitment require integrity.

The NCTM is also working on disseminating the results of the project and seeking ideas for its improvement. School boards, state legislators, governors, administrators, and teachers across the nation have been sent copies of the STANDARDS documents. We have been working with the media to discuss what makes the documents unique and useful for schools and communities. And Mr. Chairman, we did most of this with our own members dues.

NCTM's STANDARDS are continuing to be developed and changed. That is why, just two years after the introduction of the CURRICULUM STANDARDS, we released the TEACHING STANDARDS. The TEACHING STANDARDS, provide direction to those in teacher education on how to refocus their programs to embody the program outlined in the CURRICULUM STANDARDS. This project will not end with these publications. We have been developing review processes to evaluate the STANDARDS program itself, and we will be producing other documents over the next several years.

TQM as a title may or may not be a management tool for the nation's industries over the next several years, but many of the ideas embodied in it will remain. The idea of finding examples of excellence and holding them up to the nation to learn from is not new in education. The U.S. Department has been searching for examples of "unusually effective schools" for the past ten years. These schools, now called Blue Ribbon Schools, are cited as examples of schools that are effective, and/or have made significant progress meeting the educational needs of their children. In the science and mathematics education community, the President awards teachers who are examples of excellence in teaching mathematics and science each year. These teachers have created their own network to support the improvement of instruction. Both of these programs contribute to motivating schools and educators to seek constant improve. We believe they are examples of excellence.

Next steps

NCTM's STANDARDS project will adapt as the decade unfolds to what is needed for a quality mathematics education for every child. A quality education for every child will not occur

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unless we all work towards recognizing excellence, supporting our schools with funds, creating opportunities for teachers to learn more about their profession, and reaching out into our communities to emphasize the importance of education. We look forward to working with you and the Congress in making the goal of a quality mathematics education for every child a reality.

Mr. **Valentine**. Thank you, ma'am.

Mr. **Ritter**. Thanks, Mr. Chairman. I want to thank Dr. Carl for excellent testimony and also I read Dr. Huband's testimony and I find I quite agree with his goal, and I hope that ASEE, the American Society of Engineering Education, pursues that goal aggressively. We have these kind of awards in the private sector right now, why shouldn't we have them in education, which in part is private sector as well as part public sector. We also have quality awards in Government. It is about time that we add some quality awards in the educational institutions.

I would like to introduce my constituent, Ed Maclosky, who is director of human resources at Lehigh University. Lehigh University in the Lehigh Valley of Pennsylvania is well known to many of the people on this panel, but I might point out that in regards to quality, there are a number of exciting initiatives going on there. The Ben Franklin program has major training activities in quality; the Iacocca Institute is very actively engaged in the quality revolution in education; and the manufacturing services extension setter is actually bringing quality to small and mid-sized companies in our region. Lehigh University is also going to be the home of the third annual—I hope I'm not releasing anything to early here—but the third annual academia industry conference. That will be in the summer of 1992. This is a conference that has been started up by the United States Air Force, and this summer's conference is at University of Southern California.

So, this is our director of Lehigh University, the director of human resources. I say "our" because I was once a student, faculty and staffer at Lehigh University. Mr. Maclosky is in charge of a pilot program to improve quality at Lehigh and to sort of bring total quality to a university. I think we are all kind of curious as to how that is working out, whether it can or not. We are glad that you are making the effort and that Lehigh is making the effort. Thank you, Mr. Chairman.

STATEMENT OF EDWARD R. MACLOSKY, DIRECTOR OF HUMAN RESOURCES, LEHIGH UNIVERSITY, BETHLEHEM, PENNSYLVANIA

Mr. **Maclosky**. Thank you very much, Congressman Ritter.

Mr. Chairman, as indicated, my name is Ed Maclosky. I am currently the director of human resources at Lehigh University. I have had over 25 years of experience in higher education. I've done some teaching; I've been involved with curriculum design; and I've also been involved with trying to manage the processes that go on there.

Among the multitude of issues currently facing higher education, the issues of continuing escalation of costs, criticism of the pricing of both public and private education, the inability of higher education to control costs, how to improve education, the shrinking pool of students and the reduction of federal funds—all these issues are paramount.

It's clear from things in the press that change is in the wind. Recently we've seen reports in a national news media of reduction in universities trying to address issues of reduced funding. We know of instances that have gone on throughout higher education. Yet, there is also a sense that somehow education and higher education in particular is not fulfilling one of its missions—to produce educated graduates that are able to help America compete successfully in a global economy. Many of those same issues face American business and industry.

How have the corporations responded to these new challenges and are there any lessons to be learned here? I've been involved recently in an exercise at Lehigh called resource management. President Peter Likins headed an effort whereby all university entities painfully reexamined their services and output to see how relevant they were to the university mission—teaching and research. The outcome of this process was to reduce staff and eliminate $1.0 million in administrative costs and several staff positions.

One thrust that was important to us was the effort to drive responsibilities for some essential tasks away from centralized control to department and individual control, thereby putting decisions directly in the hands of the people best equipped to make them. Not all areas accepted these new freedoms with enthusiasm, mostly because I think it was so foreign to them. Thus, we began to empower a staff to make and take responsibility for decisions that were formerly made by under-centralized staff. I have observed at a few institutions systematically examined, their administrative systems from their students point of view. Moreover, few institutions have asked the question, what is there essential business? Rather than focussing and sharpening their mission, they have broadened their scope. Over the years as institutions grew by accretion, staff and services grew concomitantly. Jacque Barzun of Columbia University, writing recently in a chronicle of higher education, referred to the unfettered growth of non- teaching units that provided lifestyle improvements such as student health clubs, entertainment programs, and shopping centers, as a serious problem.

While undoubtedly if taken in isolation, their addition may have seemed justified, but as these non-teaching units impinge upon the primary mission, institutions may now need to shut these questionable and unaffordable components. Also, in many schools, the growth of academic and non-academic units has occurred without regard to the effect on the whole institution.

Now we have seen evidence that across American institutions, they have begun to view their finite resources as a finite nature and have started to seriously to review what they have wrought. Perhaps higher education could establish quality awards to those institutions that provide essential services with appropriate costs that provide the best value for the money that they charge in the eyes of their customers.

Can total quality management be adapted to higher education? Yes, I believe it can and should be. Moreover, if the Baldrige Award was extended to education, institutions would have a national standard to measure how well they are doing. Regional accrediting agencies seemingly have not addressed the considerations listed in the examination criteria: customer driven quality, continuous improvement, actions based on facts and data, and participation by all employees, and the crucial role of organizational leadership.

Most institutions of higher education do not have an understanding of quality or its key components. Often, institutions do not understand the actions that need to be taken to launch a quality program even when its benefits are seen as highly desirable; quality is just not seen as a management tool overall. Also, the organizational status of quality is low and activities are limited to administrative areas where they occur. Further, problems are fought as they occur and seldom fully resolved; fire-fighting seems to dominate. We don't see any general organized quality activities.

Is there a correlation between corporate performance and total quality management systems? I believe the testimony that we have heard from the first panel sufficiently testifies that there is.

Are public schools and other trainees of the present and future American workforce generally aware of quality principles? No. I discussed this topic with Alan Pense, the Provost of Lehigh University. He said that in his view, there is no indication that the public schools have begun to teach and expose their students to quality principles. The importance of these concepts is generally not being discussed. However, the news is not all that bad. Lehigh University and the Iacocca Institute in cooperation with the United States Air Force, has proposed a National Education and Training Institute which I have included in the appendix.

Lehigh University is also expanding its outreach programs to attract non-traditional students, including minorities to begin to strengthen the appeal of pursing an education in mathematics and science. Also in my Appendix I have listed some of our current efforts.

Are elementary statistical principles being added to the general and business math curricula? Generally they are not. There are pockets of attempts to incorporate elementary statistical principles into general business and math curricula. Simple statistical concepts which could readily be incorporated into these curricula seem to be in short supply. This may be because the educational organizations responsible for curriculum development have themselves not given sufficient attention to these concepts.

Furthermore, in discussion with faculty at Lehigh, they acknowledge that the principles of quality are not directly, but only tangentially taught in their business course programs. Product quality is a course for upperclassmen and graduate students in the industrial engineering program. All industrial engineering students take basic statistics as part of their program. But quality per se has not been worked into the more general offerings. For example, in the arts and science program, I would hesitate to offer to add that most students have no idea what quality is. Some faculty acknowledge its prominence, but they think perhaps that quality is a passing fad and therefore do not want to create any separate courses towards it. Faculty have autonomy in curriculum matters, and need to be convinced of quality's permanence.

As indicated by Dr. Huband, perhaps the National Science Foundation's engineering subdivision could augment funding for quality curriculum development for undergraduate and graduate engineers.

Should the legislation be expanded to include a focus on education in quality principles? Most definitely. More attention needs to be placed on the style of managing people that TQM suggests and demands. Universities have a special charter that separates them from other organizations. They are very conservative and have a slow reaction time. This is not altogether bad because one would hope that fundamentals of knowledge remain consistent and altered only after extensive research. Also, education by its nature seems to resist measurement. Without measurement, evidence for the attainment of improvements is absent and only assertions remain.

With that in mind, the application of quality principles such as TQM is a very hard sell. Not only does one encounter the normal resistance to change that industry observes, but in an educational setting, the first premise is sometimes rejected.

If the legislation was expanded to focus on education as part of the Baldrige Award, I believe it would provide a framework to help institutions address some of the issues that I've just indicated. One reads that many business firms use the Award to audit their processes and product, and to use the results as a source of continual improvement. This alone would help educational institutions examine their systems and product in the eyes of their customers.

Finally, I believe that these principles cannot be taught effectively unless the institution itself is actually practicing the principles of quality and in the management of the institution. I find it very encouraging that of the organizations requesting applications for the 1991 Award, a significant portion were not even eligible. However, they found the criteria as a value tool to measure their progress towards quality.

In summary, I urge you take whatever steps you can to encourage the development of quality in education and especially in higher education. I also urge you to adopt either an expansion or some modification of the Baldrige Award. It would be a bold and important step.

Thank you, Mr. Chairman for giving me the opportunity to speak to the panel.

[The prepared statement of Mr. Maclosky follows:]

TESTIMONY OF

Edward R. Maclosky
Lehigh University
Bethlehem, PA 18015

U.S. HOUSE OF REPRESENTATIVES
Committee on Science, Space, and Technology
Subcommittee on Technology and Competitiveness

"Quality Improvement in America"
April 23, 1991
1:30 p.m.

I. INTRODUCTION

My name is Edward R. Maclosky. I currently am the Director of Human Resources at Lehigh University in Bethlehem, Pennsylvania. I have had over 25 years of experience in higher education. Higher Education is labor intensive. I work with people. By that I mean recruitment, hiring, training, compensating and rewarding, and discharging staff.

Current Issues in Higher Education

Among the multitude of issues currently facing higher education, the issues of continuing escalation of costs, criticism of the pricing of both public and private education, the inability of higher education to control costs, how to improve education, the shrinking pool of prospective students, and the reduction of federal funding are paramount.

It is clear that change is in the wind. Reports recently highlighted cost-containment efforts of both public and private research universities including Columbia, Cornell, Stanford and the University of Chicago and the University of Michigan. Higher education is starting to pay attention to the competition. One might even argue that this set of circumstances is healthy and we are witnessing the removal of overcapacity.

And yet, there is also a sense that somehow education and higher education, in particular, is not fulfilling one of its missions; to produce educated graduates that are able to help America compete successfully in a global economy. Many of these same issues face American business and industry. Increase foreign competition, escalating costs, and a loss of confidence by consumers in the quality of the goods made in the United States. How have some corporations responded to the new challenges? Are there any lessons to be learned here?

Total Quality Management

Because of increased competition, continued loss of market share, and the perception that many American goods lacked quality, industry looked to the issues of quality. Focusing on quality religiously seemed to be helpful to their competition. Examination of a quality-based producation showed that quality consisted of specific techniques and a philosophy of management; a philosophy that commits the entire organization to quality improvement, attacks processes not employees, focuses on the customer and satisfying their requirements, instilling teamwork in the workforce, and creating an atmosphere for innovation and constant improvement. We can call this approach Total Quality Management (TQM).

Today, we now recognize as firms in the quality movement vanguard Ford, Xerox, Hewlett-Packard and the recent Baldrige Award winners to name a few.

My Personal Involvement

I have been involved in a recent exercise that Lehigh University called "Resource Management." President Peter Likins headed an effort whereby all University entities painfully reexamined their services and output to see how relevant they were to the mission of the University - teaching and research. The outcome of this process was to reduce staff and eliminate $1 million in administrative costs. One thrust of the effort was to drive responsibilities for some essential tasks away from centralized control to departmental and individual control, thereby putting decisions directly in the hands of the people best equipped to make them. Not all areas accepted this new freedom with enthusiasm, mostly because I think it was so foreign to them. We began to empower our staff to make and take responsibility for decisions that were formerly made by other centralized staff.

The Northeast Tier of the Ben Franklin Technology Partnership, a joint program with the Commonwealth of Pennsylvania, located on the campus of Lehigh University, offers a program in the Lehigh Valley that promotes quality. The program's title, EQUIP, means Excellence in Quality which Improves Profitability. The program trains problem-solving teams in the Transformation of American Industry program. Using the Deming methodology, a team from a company works on solving a specific identifiable problem within their organization. So far, up to 50 teams from business, industry, health care and education have successfully participated. I was personally trained in the EQUIP program and launched a pilot cost-saving project at Lehigh: to reduce the number of individual mailings on campus which will cut down on the waste of paper. The project was well received by the participants and the University administration.

II. WHY TOTAL QUALITY MANAGEMENT IN HIGHER EDUCATION?

Components of Higher Education

Many believe research universities are research-driven and act more like think tanks with students being incidental. This means that primary rewards are for scholarship and new knowledge production. Other institutions of higher education are more client and service driven and become increasingly more so as we progress from doctoral granting down to two-year colleges. Probably 80% of American colleges and universities focus on teaching as their primary mission and hence, need to focus on the satisfaction of their clients (students).

As previously mentioned, higher education has problems similar to the problems facing business and industry. For example, the value of higher education is questioned; is the value of education worth the price? In addition, how will higher education tackle its escalating costs? How can it make more effective use of resources? The cost of four years at many private institutions now is $80,000 to $85,000.

I have observed that few institutions systematically examine their administrative systems from their students' point of view. Moreover, few institutions have asked the question "what is their business." Rather than focusing and sharpening their mission, they have broadened its scope. Over the years, as institutions grew by accretion, staff and services grew concomitantly. Jacques Barzun of Columbia University, writing recently in the *Chronicle of Higher Education*, referred to the unfettered growth of nonteaching units that provided life-style accoutrements to students such as health clubs, entertainment programs and shopping centers, as a serious problem. While undoubtedly, if taken as isolation, their addition may have seemed justified. But as these nonteaching units impinge upon the primary mission, institutions may now need to shed these questionable and unaffordable components. Also, in many schools, growth of academic and nonacademic units has occurred without regard to the effect on the whole institution.

We now have seen evidence that across America institutions have begun to view the finite nature of their resources and have started to seriously review what they have wrought. Perhaps, higher education could establish quality awards to those institutions that provide essential services with appropriate costs; i.e. provide the best value for the money charged in the eyes of their customers!

III. CAN TOTAL QUALITY MANAGEMENT BE ADAPTED TO HIGHER EDUCATION?

Yes, I believe it can and should be. Moreover, if the Baldrige Award was extended to education, institutions would have a national standard to measure how well they were doing. Regional accrediting agencies seemingly have not addressed the considerations listed in the examination Baldrige criteria: customer driven quality, continuous improvement, actions based on facts and data, and analysis, participation by all employees, and crucial role of organizational leadership.

Most institutions of higher education do not have an understanding of quality or its key components. Often, institutions do not understand the actions that need to be taken to launch a quality program even when its benefits are seen as highly desirable; quality is not seen as a management tool. Also, the organizational status of quality is low and activities are limited to administrative areas when they occur. Further, problems are fought as they occur and seldom fully resolved; fire-fighting dominates. We do not see any organized quality activities.

IV. I would like to respond to the specific issues listed in the charter.

Is there a correlation between corporate performance and total quality management (TQM) systems?

There seems to be a positive correlation between corporate performance and TQMs. Those corporations that have won the annual Baldrige Award can attest to the degree of correlation. Moreover, the success of those American organizations that have adopted TQM provide sufficient testimony to the value of adopting TQM. Specifically, Digital Equipment, Hewlett-Packard, AT & T, ITT, Ford and General Motors have adeopted the principles in some fashion. It is also generally acknowledged that Japanese firms that manufacture consumer electronics, home appliances, clothing, integrated circuits, synthetic rubber, construction equipment, and automobiles attribute much of their success to TQM.

Are public schools and other trainees of the present and future American workforce generally aware of quality principles?

No. I discussed this topic with Alan Pense, Provost of Lehigh University. He said that there is no indication that the public schools have begun to teach and expose their students to quality principles. The importance of these concepts is not generally being discussed. However, the news is not all bad. Lehigh University and the Iacocca Institute in cooperation with the United States Air Force has proposed a National Education and Training Institute (NEAT) to prepare the future workforce in required competencies and skills through the utilization of basic education, especially technology in the middle level and to utilize technology to address the training needs of the present adult workforce. I have enclosed a summary of the program in Appendix A.

Lehigh University is also expanding its outreach programs to attract non-traditional students, including minorities and to begin to strengthen the appeal of pursuing an education in mathematics or science. In Appendix B, I have listed some of our current efforts. More money ought to be earmarked to institutions to support these endeavors, If the Baldrige Award was expanded to educational institutions, an evaluation of an institution's outreach in this manner could become a criteria for its evaluation of quality.

Are elementary statistical principles being added to general and business math curricula?

Generally, no. There are pockets of attempts to incorporate elementary statistical principles into general and business math curricula. Simple statistical concepts which could readily be incorporated into these curricula seem to be in short supply. This may be because the educational organizations responsible for curriculum development have themselves not given sufficient attention to statistical concept development. Furthermore, in discussions with faculty at Lehigh, they acknowledged that the principles of quality are not directly, but only tangentially taught in the Business College programs. Product quality is a course for upperclassmen and graduate students in the Industrial Engineering program. However, many other engineering majors often elect to take the Product Quality course. All Industrial Engineering students take basic statistics as part of their program. Quality per se has not been worked into the more general offerings. Some faculty acknowledge its current prominence, but think that perhaps it may be only a passing fad and therefore, do not create separate courses. Faculty have autonomy in curriculum matters, but need to be convinced of quality's permanence. As a start, the National Science Foundation's engineering subdivision could augment funding for quality curriculum development for undergraduate and graduate engineers.

Once again, the problem has been recognized at least at Lehigh and the Iacocca Institute by its attention to the school's program (see Appendix A).

Should the legislation be expanded to include a focus on education in quality principles?

Most definitely. More attention needs to be placed on the style of managing people that TQM suggests and demands. Universities have a special character that separates them from other organizations. They are conservative and have a slow reaction time. This is not altogether bad, because one would hope that the fundamentals of knowledge remain consistent and altered only to after extensive research. Also, education by its nature seems to resist measurement. Without measurement, evidence for the attainment of improvements is absent and only assertions remain.

With that in mind, the application of quality principles such as TQM is a very hard sell. Not only does one encounter the normal resistance to change that industry observes, but in an education setting, the first premise of quality is rejected.

If the legislation was expanded to focus on education as part of the Baldrige Award, I believe it would provide a framework to help institutions address some of the issues that the criteria of the Award mandate. One reads that many business firms use the Award criteria to audit their processes and product and to use the results as a source of continual improvement. This alone would help educational institutions examine their systems and product - in the eyes of their customers. Finally, I believe that these principles cannot be taught effectively unless the institution itself is actually practicing the principles of quality in the management of the institution. I find it encouraging that of the organizations requesting applications for the 1991 Award, a significant portion were not even eligible. However, they found the criteria a valuable tool to measure their progress towards quality.

V. SUMMARY

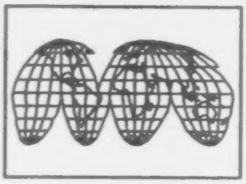
In summary, I urge you to take whatever steps you can to encourage the development of quality in education and especially in higher education. I also urge you to adopt either an expansion or some modification of the Baldrige Award. It would be a bold and important step.

Thank you, Chairman Valentine for giving me the opportunity to address your committee on a topic crucial to America. I would be pleased to answer any questions.

APPENDIX A

National Education & Training Institute

N.E.A.T.



Iacocca Institute

Lehigh University

Iacocca Institute

Iacocca Institute

Lehigh University

NATIONAL EDUCATION AND TRAINING INSTITUTE

(NEAT)

The foundation of United States industrial competitiveness lies in the fundamental skills and competency of its workforce. Strengthening our industrial competitiveness requires the utilization of technologies and capabilities present in many areas of U.S. infrastructure, not only from the traditional educational establishment. Department of Defense and other federal laboratories have invested substantial resources in the development of technologies to upgrade the fundamental skills of armed forces and other government personnel. The current and future workforce in U.S. industry requires many similar fundamental skills to insure U.S. industrial competitiveness. The National Education and Training Institute (NEAT) to be led by the Iacocca Institute at Lehigh University, will concentrate on the needed core competencies and fundamental skills for the present and future workforce. Pilot programs will be designed and implemented for addressing these needs through technology transfer. The education and training thrust will be a.) to prepare the future workforce in required competencies and skills through the utilization of basic education, especially technology in the middle level. b.) to utilize technology to address the training needs of the present adult workforce.

The Iacocca Institute was established at Lehigh University in 1987 to improve the global competitiveness of American manufacturing industries. The Institute concentrates expertise and initiates active programs to bring appropriate resources to bear on national competitiveness problems. Resources include those at Lehigh and other universities, the federal government, other non-profit organizations, the education establishment throughout the United States, and national and multi-national corporations.

The organization of the NEAT institute and its major projects will follow the pattern of partnership set by other Iacocca Institute activities. A consortium is being organized to include the Iacocca Institute, federal laboratories, selected universities, selected federal agencies and major corporations. Pilot projects in workforce education will target one factory at a time with project guidance including labor union representation and educational assessment specialists, as well as the groups noted above. Pilot programs in basic education will include guidance from basic education teachers, administrators and guidance counselors, as well as the groups noted above.

The base concept of the NEAT institute is that the industrial sector is a major customer of any educational system. The effective educational systems of the 1990's and beyond will be those that provide graduates with skills and competencies necessary to support globally competitive enterprises. Studies have been and are being done to identify the particular fundamental skills and competencies required to fulfill this particular role of the educational system. A consortium involving major corporations, schools, universities and the federal government can substantially improve the productivity of existing efforts in these areas.

The rationale for the thrust toward workforce training is obvious: American business and industry cannot afford to wait for a next generation of trained workers. Technology transfer has the potential of remedying existing skill deficiencies and re-tooling the workforce for constantly changing skill demands. Since many of the existing technologies to be transferred for these adult training needs were originally developed for adult use, they need only be adapted to the specific job requirements, not to learner age level.

The second thrust, basic education, takes a proactive stance in the preparation of the future workforce. More specifically, middle level education (grades 5-9) are particularly appropriate for preparation in fundamental workforce skills. It represents a critical stage for career exploration. Decisions regarding post secondary education, post high school entry into the workforce, or even completion of high school are often made at this time. Middle level education is also the last educational stage where fundamental skills such as reading and basic math are generally emphasized in the schools. In high schools, students are frequently tracked into more specialized areas. If middle level students obtain basic skills, opportunities for more advanced learning in math, science and other areas are open to them. If they have not mastered the basic skills at this level, their future career choices are greatly limited. Thus the middle level is a critical educational stage where technology can have a major impact on the career choices and capabilities of the future workforce.

BASIC EDUCATION PROGRAMS

Future workforce needs will be addressed by using existing methodologies and studies to identify fundamental skills and core competencies for industry in general and particular industry segments. These needs will be analyzed through continuing dialogue between teams of experts in business, education and technology. A broad representation of educators will be engaged in this dialogue to identify the competencies and skills needed and determine how various technologies might be applied to solve workforce concerns. Educator representation will include basic education teachers, administrators, guidance counselors, curriculum supervisors and university faculty. Through this team approach, typical program steps would be:

1. Identify job skills and competencies needed for the future workforce.

2. Identify how specific technologies be adapted and transferred for educational purposes to address these workforce needs.

3. Determine at what age level this technology application should be implemented.

4. Identify the characteristics of the ideal test site school and in what schools are these characteristics found.

5. Determine how these educational technologies can be incorporated into the ongoing educational processes of the school.

6. Develop an on-site implementation plan.

7. Conduct needed training for school personnel who will carry out implementation.

8. Evaluate skill enhancement achieved in the pilot program.

9. Develop a plan for replication in other educational settings that considers typical resource constraints and impediments to new program implementation.

10. Plan for program replication that particularly benefit at-risk students and diverse student populations.

The NEAT transfer of technology to education offers the opportunity to work in a partnership between business, education, government and higher education that has been lacking in many previous efforts. Because of these past deficiencies, technology has rarely been fully integrated into basic education. By responding to the needs of the future workforce, we are also responding to public demand for change within the educational system. Such a concerted effort to improve the education of America's young people, holds the promise of significantly changing the instructional processes in schools.

WORKFORCE TRAINING PROGRAM

The workforce training program will establish methodologies, techniques and technical systems for workforce training. These will be implemented and evaluated directly by the NEAT institute on a prototype basis, with a long term goal of making that material available as widely as possible for use within industries and industrial groupings.

The work will make extensive use of methods and technologies developed by the Federal Laboratories. Typical steps, for a given industry or industrial sector would be:

1. Identify job skills required for international competitiveness. Example: total quality management in an electronic industry.

2. Identify core competencies which are necessary for complete mastery of these job skills. Example: statistical quality control charting, operation of computerized measurement machines, electronic switching of computer-based data.

3. Identify fundamental skills needed to fulfill that job function. Examples: basic statistics, operation of a computer.

4. Identify core educational subjects needed to be able to become skilled. Examples: arithmetic, geometry and trigonometry, technical reading and writing.

5. Review available educational systems and modules to determine matches with fundamental skills, core competencies and job skills for a particular company or industry.

6. Adapt available systems and modules to the needs of particular plant sites and companies.

7. Install pilot training programs in particular plant sites chosen by consortium members.

8. Evaluate skills enhancement and performance enhancement achieved at pilot location. Adapt training programs to improve cost and educational effectiveness.

9. Fully document and package training programs for broad use.

10. Make these programs broadly available through consortium members and directly through the institute.

On the basis of experience gained with selected industries, the Institute will develop a program which can be used by other consortium members to address the needs of a broad range of industries.

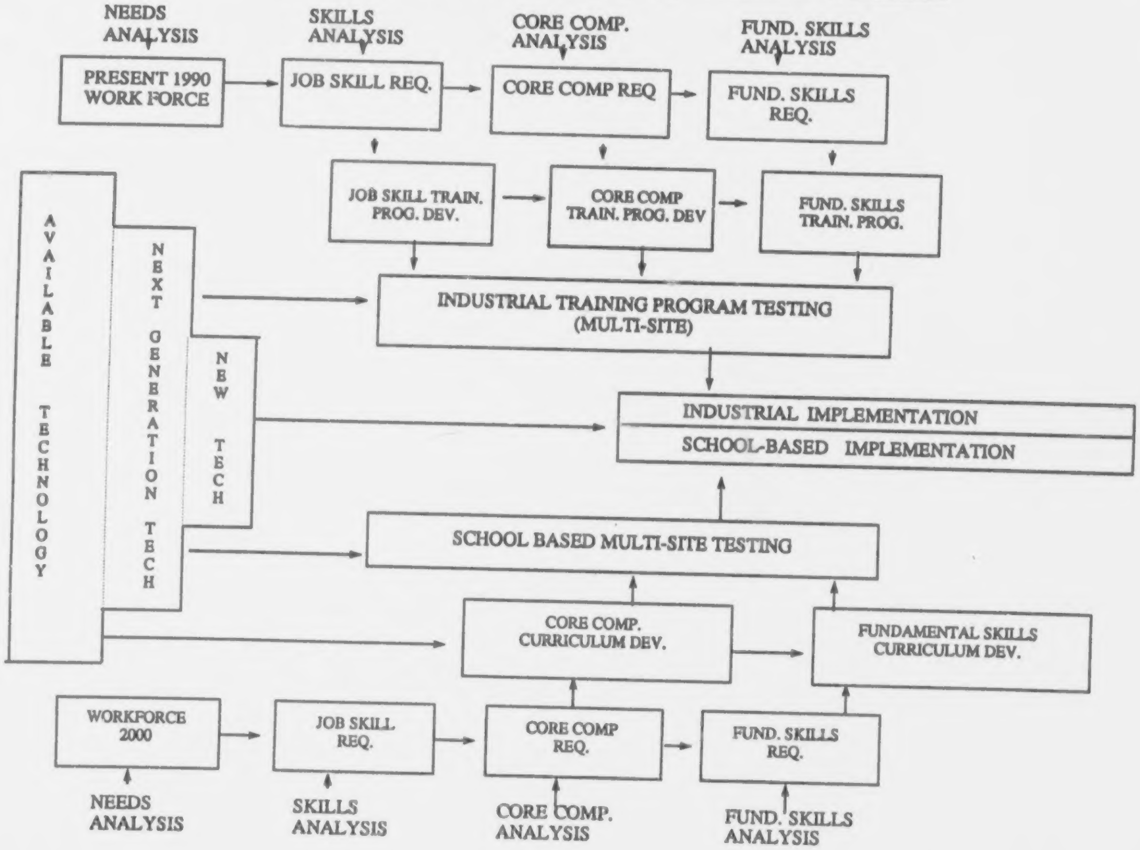
EDUCATIONAL ASSESSMENT OFFICE

The NEAT institute will include an office of educational assessment to specifically analyze and measure effectiveness for all pilot programs coordinated through the NEAT institute. The goal of the institute is to successfully replicate workforce training and basic education programs broadly throughout the United States. This will be possible only if all pilot programs are carefully monitored, documented, and evaluated as to both their cost effectiveness and educational effectiveness. A separate board of review, again coordinated through the Iacocca Institute, will include experts from universities, basic education, the federal government and corporations to carefully measure and document educational effectiveness of pilot programs.

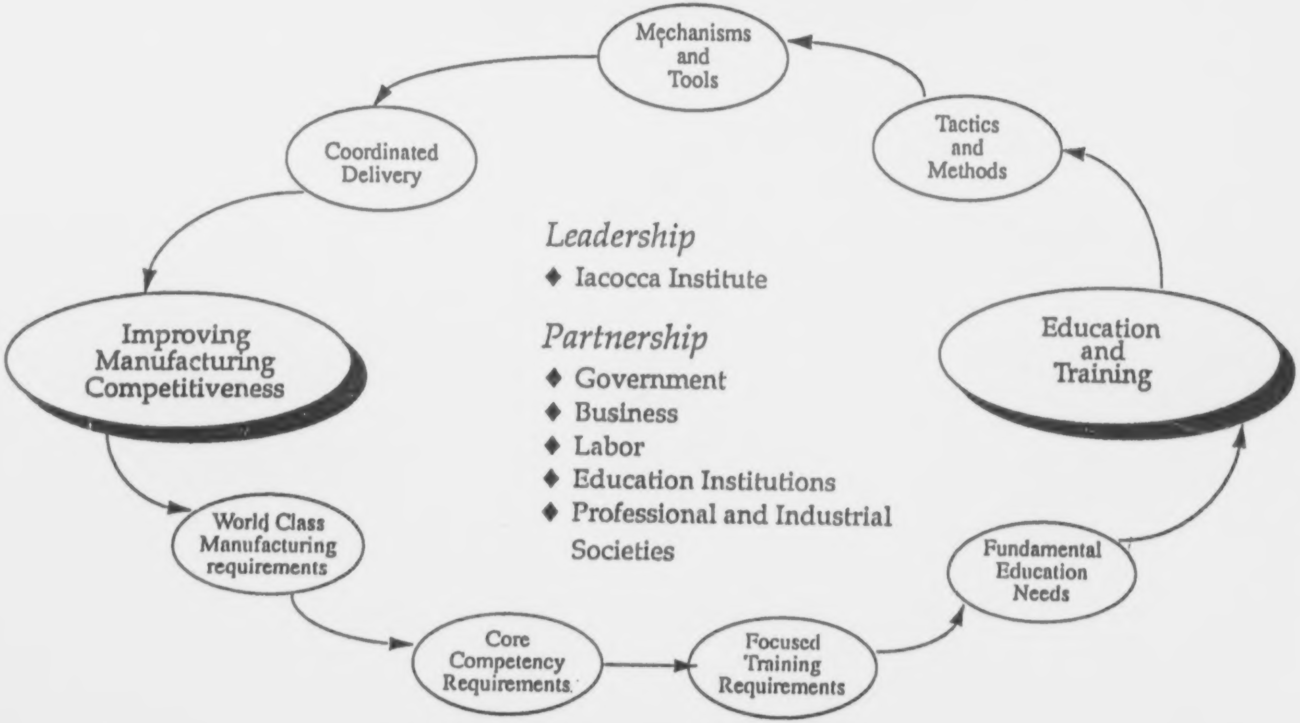
OFFICE OF PROGRAM REPLICATION

Building upon the Iacocca Institute's successful replication programs for Cities in Schools, Inc., (a national dropout prevention program), the Office of Program Replication will be formed. This office will prepare documentation for basic education and workforce training programs and provide full training in program adaptation and implementation for industrial and basic education customers. On-site follow-up assistance will also be available to insure that programs can be fully and effectively implemented.

NEAT CONCEPT OF EDUCATION TECHNOLOGY TRANSFER


NEEDS ANALYSIS
SKILLS ANALYSIS
CORE COMP. ANALYSIS
FUND. SKILLS ANALYSIS
PRESENT 1990 WORK FORCE
JOB SKILL REQ.
CORE COMP REQ
FUND. SKILLS REQ.
JOB SKILL TRAIN. PROG. DEV.
CORE COMP TRAIN. PROG. DEV
FUND. SKILLS TRAIN. PROG.
AVAILABLE TECHNOLOGY
NEXT GENERATION TECH
NEW TECH
INDUSTRIAL TRAINING PROGRAM TESTING (MULTI-SITE)
INDUSTRIAL IMPLEMENTATION
SCHOOL-BASED IMPLEMENTATION
SCHOOL BASED MULTI-SITE TESTING
CORE COMP. CURRICULUM DEV.
FUNDAMENTAL SKILLS CURRICULUM DEV.
WORKFORCE 2000
JOB SKILL REQ.
CORE COMP REQ.
FUND. SKILLS REQ.
NEEDS ANALYSIS
SKILLS ANALYSIS
CORE COMP. ANALYSIS
FUND. SKILLS ANALYSIS

National Education And Training Institute Concept



Mechanisms and Tools
Tactics and Methods
Coordinated Delivery
Education and Training
Improving Manufacturing Competitiveness
World Class Manufacturing requirements
Core Competency Requirements
Focused Training Requirements
Fundamental Education Needs

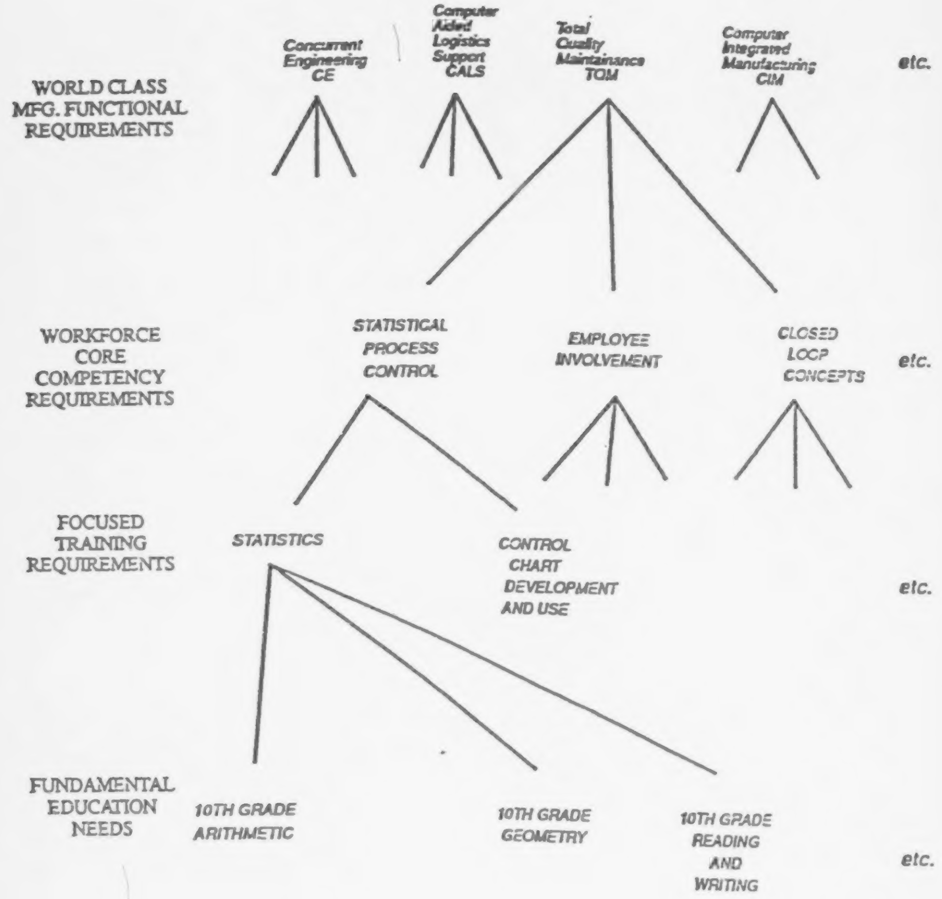
Leadership

- ◆ Iacocca Institute

Partnership

- ◆ Government
- ◆ Business
- ◆ Labor
- ◆ Education Institutions
- ◆ Professional and Industrial Societies

NATIONAL EDUCATION AND TRAINING (NEAT) INSTITUTE EXAMPLE


WORLD CLASS MFG. FUNCTIONAL REQUIREMENTS
Concurrent Engineering CE
Computer Aided Logistics Support CALS
Total Quality Maintainance TQM
Computer Integrated Manufacturing CIM
etc.
WORKFORCE CORE COMPETENCY REQUIREMENTS
STATISTICAL PROCESS CONTROL
EMPLOYEE INVOLVEMENT
CLOSED LOOP CONCEPTS
etc.
FOCUSED TRAINING REQUIREMENTS
STATISTICS
CONTROL CHART DEVELOPMENT AND USE
etc.
FUNDAMENTAL EDUCATION NEEDS
10TH GRADE ARITHMETIC
10TH GRADE GEOMETRY
10TH GRADE READING AND WRITING
etc.

APPENDIX B

LEHIGH UNIVERSITY
Outreach and Pre-College Programs

COMPUTER INTEGRATED MANUFACTURING LABORATORY PROGRAM

General Goals: To acquaint students with the engineering field as a future career. It is a "hands on" experience program for one-half day.

Target: Grade 11

S.T.A.R. PROGRAM (Students That Are Ready)

General Goals: To encourage students to improve academically; stay in school and acquire a high school diploma; explore college and all it has to offer; consider attending Lehigh University; improve self-esteem; and develop Lehigh University contacts (through tutoring). To expose these students to a new experience on the Lehigh campus.

Target: Grades 6-8

M.E.T.A.S. PROGRAM (Math Enhancement and Teaching Applied Science)

General Goals: To encourage student participation in several kinds of science experiments under the supervision of Lehigh faculty. To increase positive attitude and knowledge of science and mathematics.

Target: Grades 4-8

JASON PROJECT AT LEHIGH

General Goals: To build enthusiasm and motivation in science for students and teachers. To encourage young people to pursue science related careers.

Target: Grades 4-12

MINORITY HIGH SCHOOL RESEARCH APPRENTICE PROGRAM (NIH)

General Goals: To stimulate among minority high school students an interest in pursuing careers in biomedical research and the health professions. To enhance scientific opportunities for minority high school teachers of science.

Target: Grades 10-12

MATHEMATICS SCHOLARS CONTEST PROGRAM

General Goals: To motivate high school students to pursue careers in mathematics and science. The math contest takes place on campus in March for about 250 high school students.

Target: Grades 9-12

LEHIGH UNIVERSITY
Outreach and Pre-College Programs

SOUTH MOUNTAIN MIDDLE SCHOOL SCIENCE PROGRAM

General Goals: To motivate 8th grade gifted students to pursue careers in Biology, Chemistry, Physics and Geology through science fair program.

Target: Grade 8

YOUNG SCHOLARS PROGRAM

General Goals: To provide an opportunity for academically-talented rising senior students to take college level courses that their high schools may not be able to offer for credit and at no cost. To provide additional incentive and motivation for talented students to pursue a college career. To establish closer ties with Lehigh University and the surrounding high schools. To provide an opportunity for Lehigh University faculty and staff to become better acquainted with the needs and interests of high school students, as well as high school teachers and staff members in the community.

Target: Rising high school seniors

COMMONWEALTH PARTNERSHIP

General Goals: To strengthen secondary school instruction. To create opportunities for teachers to update and deepen their understanding of molecular and cell biology. To improve student interest and achievement in biology by equipping their teachers with the knowledge, tools and technique to revitalize their institution.

Target: High school biology teachers

SPACE BUS PROJECT

General Goals: To increase awareness and motivation for students to study science and explore it as a career choice.

Target: Middle school

IN SCHOOL CAREER EXPLORATION PROGRAM

General Goals: To give students an idea of what career fields are open to them and what preparation different vocations require. Lehigh faculty visit area schools to explain their field of expertise as part of the program.

Target: Grades 11-12

LEHIGH UNIVERSITY
Outreach and Pre-College Programs

DEAN'S DIPLOMATS PROGRAM

General Goals: To foster an understanding of the various disciplines of engineering and encourage students through tours and "first hand" experience to explore engineering as a career choice.

Target: Middle school through high school

BETHLEHEM AREA VO-TECH SCHOOL ENGINEERING RELATED TECHNOLOGY PROGRAM

General Goals: To encourage students to pursue careers in Applied Engineering and in engineering related technology and electro-mechanical fluid power. These students will attend a series of lectures on campus presented by Lehigh faculty members from the technology and engineering fields and lectures from outside the University.

Target: Grade 9

CITIES IN SCHOOLS PROGRAM

General Goals: To develop integrated hyper-media training curriculum for administrators and other personnel of Cities in Schools (CIS) programs. To assist CIS trainers in delivering training at the National Center for Partnership Development at Lehigh University and at CIS Regional Training Centers. To address school attendance, substance abuse, literacy and other critical social problems affecting at-risk youth and their families.

Target: Grades K-12

MAT/TER PROGRAM

General Goals: To increase pre-college student and teacher awareness of the field of Materials Science and Engineering.

Target: Pre-college teachers

AMMIOP (Advance Materials for Manufacturing International Outreach Portugal Program)

General Goals: To encourage interactions between Lehigh faculty and students and faculty and students from Portugal dealing with various aspects of advanced materials and manufacturing.

Target: N/A

LEHIGH UNIVERSITY
Outreach and Pre-College Programs

PROJECT STARTRACK

General Goals: To raise student awareness of post-secondary education opportunities. To encourage parents to take more positive attitudes toward their children's post-secondary plans. To demonstrate to school personnel how they can overcome the barriers of student participation in formal education beyond high school.

Target: Grades 5-12, parents, teachers, high school counselors

GEOSCIENCE EDUCATORS OF THE LEHIGH VALLEY PROGRAM

General Goals: To increase awareness of Geoscience to high school teachers and students.

Target: High school teachers

HUGHES INTERN RESEARCH EXPERIENCE SUMMER PROGRAM

General Goals: To enable middle school teachers to gain real-world research experience by working alongside Lehigh scientists. Teachers are encouraged to take back their summer experience and enthusiasm to their classrooms.

Target: Middle school teachers

EDWARD R. MACLOSKY
Biography

EDUCATION

B.S. Microbiology, Connecticut, 1964.
M.S. Microbiology, Connecticut, 1965.
M.B.A. Western New England College, 1981.

EXPERIENCE

Director of Human Resources, 1987 - Present
Lehigh University
Bethlehem, PA

Director of Personnel Services, 1983 - 1987
Skidmore College
Saratoga Springs, NY

Director of Personnel, 1971 - 1983
Springfield Technical Community College
Springfield, MA

MAJOR INTERESTS

- Total Quality Improvement in Higher Education

- Providing Customer Oriented Service in Human Resources

- Flexible Benefits
  Providing employee choice.
  Controlling health-care costs.
  Wellness Programs.

- Human Resources Management Development
  Making the Human Resources function decentralized.
  Empowerment of employees.
  Analysis of organizational culture, helping or hindering productivity.

EDWARD R. MACLOSKY
Biography - Page Two

SIGNIFICANT ACCOMPLISHMENTS

- Developed professional Human Resources functions at three institutions.
- Installed two complete Flexible Benefit Programs.
- Started Human Resource Training at two institutions.
- Revised two Institutional Retirement Programs.

MEMBERSHIPS

College and University Personnel Association (CUPA)
National

Society for Human Resource Management (SHRM/ASPA)
National
Lehigh Valley Chapter

PUBLICATIONS

Made presentations on topics of interest to Human Resources professional groups (CUPA) regionally and nationally as follows:

- *Retirement Alternatives: How to Install*
  National Association of College and University Business Officers (NACUBO), 1987.
- *How to Analyze your Institutional Culture*
  Eastern College and University Personnel Association (CUPA), 1987.

PERSONAL

Maclosky is married and has three sons who reside in Reston, Virginia, Westfield, New Jersey and Rye, New York. He is a dedicated runner, loves opera and Big East basketball, Connecticut in particular.

Mr. **Valentine**. Thank you, sir. We thank all of you very much. I agree. I had a question, one of the questions here before me has to do with whether or not American schools are producing workers with strong enough math and reading skills, and so on. I'm not even going to ask that question. I think that it has become a truism that they are not. The high schools in this country, perhaps more so much more of a problem in some places than in other places, are not producing students that can qualify to make much of a contribution toward quality. The question more often is whether or not they can read the phone book or something of that kind, not whether they can do the sort of things that really should be expected of them.

We would hope that it would be possible to make a worthwhile extension of this concept into some other areas, but when we talk about extending the Malcolm Baldrige Awards or similar recognitions of achievement by whatever name they are called, into the colleges and universities in this country, don't we run into some real problems at the very beginning. There is that different type of motivation or drive that would cause an automobile manufacturing company in this country to strive to win this award. Isn't the motivation different than it would be in education?

Suppose some of the colleges and universities in the country decide not to play. There are colleges that I can name and that you could too that whether they asked to be judged or not, they are still going to be in the minds of most people, the elite institution of higher learning in the country. Unless we get in the business of someway to rank them all, like U.S. News and World Report tries to do, what are we going to accomplish if we just say, listen, all you colleges and universities agree; Lehighs and others, you can apply for this award or you don't. How many are going to? Are we going to give the award to the top five, to the top ten. What do you say about that?

Dr. **Huband**. I think you are right, that there will definitely be many institutions that will feel that their excellence is already well known.

Mr. **Valentine**. Some secured by Lord God Almighty.

Dr. **Huband**. I'm sure, and those schools will not participate, just as the United States did not participate in total quality management during the era immediately following World War II. I think though, that if the process were initiated, you would find some hungry universities, schools that were bent on achieving excellence and recognition, striving to accomplish and getting recognition for that accomplishment. That would indeed create a battle of that category. Again, I suspect not the top few. It would only be after those schools began succeeding in ways that the top schools were not, and the recognition became general—that it was an effective process. I think you would have those schools playing catch-up.

Mr. **Valentine**. Well might you not have to compare them to schools that didn't even ask to enter the contest.

Dr. **Huband**. I think that you don't. I think that there is enough—the competition for students is not in these first chair schools. First chair schools are going to continue to get good students. There is a competition for students in this era of declining age cohorts, and I think that those second tier schools compete among themselves, and they are looking for leverage to step out above their competitive schools. They are not looking to reach number one initially. So, I think that competition among a tier of institutions will be an effective competitive process, and will bring out that level of competition without having to engage the first year.

I think it will be a while, just as it was a while before the Japanese started eating our lunch, before the first chair institutions will wake up and realize that they run the risk of being bypassed.

Mr. **Maclosky**. If I may, Mr. Chairman. I believe that the quality effort, you know, will catch on to the other first chair institutions, but they are not immune to some of the problems. You assured the individuals speaking here as saying generally their graduates are not prepared in the types of things they are looking for, whether they gradate from the top flight institutions or from what you call a lower tier schools. So, the same issues apply, they just think they don't have to worry about it at this point.

Mr. **Valentine**. As to two members of the panel, Dr. Huband and Dr. Carl, but of you represent professional organizations or societies as to each of you. First of all, Dr. Carl, has your organization considered advocating curriculum reform that includes the mathematics that quality educated companies need for their employees and what other ways do you take to channel what you think should be done to get that back into the hands of people who can make the decisions.

Dr. **Carl**. The National Council of Teachers of Mathematics certainly has been very closely in touch and networking, if you will, with the business and industry in all of our projects, but mainly in the setting of standards. We have shared our documents in its draft stages with corporate management and business and industry, especially those people who have over time brought support to the schools as volunteers to determine what it is that is needed, and in some instances, we have already found corporate entities coming to schools to bring the dollars that they had used in prior years, to retrain the workforce to help prepare the youngsters who are presently in our schools and will be entering the workforce. We find that we are on the same page, if you will, when we talk about our process skills with the youngsters needing to know how to solve problems, and more importantly, how to pose problems, and realize that the real world does not have every problem that is factorable and everything doesn't come out with just a one right answer. But rather there are communities working together and in the business and industry to solve the problems of business and industry. They have, in many ways, been supportive of our curriculum standards where we speak to youngsters working in teams to decide what the problem is, and how they might go about them, and have supplied some of those.

Mr. **Valentine**. Do you have what you deem to be a satisfactory, an organized conduit of method or means of getting your views across to the various boards of education and the principals?

Dr. **Carl**. The curriculum and evaluation standards which was our document released in 1989 was endorsed by all of the major organizations such as the Chief State School Office, the National Association of Elementary Principals, Secondary Principals, School

Supervisors and the like. Within our ranks in NCTM, we have an organization or a council of State supervisors of mathematic, and that tier of people who are very much involved in setting and outlining curriculum and standards for the states and the school districts.

We have, over the past five to six years, if not longer, been regularly invited to present our programs to the many regional and national meetings held by the school boards and people in other such groups.

Mr. **VALENTINE**. Would any of you, you Dr. Huband, Dr. Maclosky, have any contact with textbook commissions in the various States, and how, in your opinion, would American business and industry go about having input into the decision- making process, at least ways to discuss, if not to make a decision as to what is taught in the schools—mathematics and science.

Dr. **HUBAND**. We, of course, are largely oriented toward the higher education field, although we are very supportive of the activities, any activities in fact, that will enhance the pre-college education of the students that will be entering into the higher education field.

In terms of making total quality management more familiar to colleges of engineering, there are two activities that we are engaged in at this time. I and my president, Curt Tompkins, and the incoming president, Leighton Sissom, met with the current executive director, president and incoming president of the Accrediting Board on Engineering and Technology at few weeks ago, to discuss possible collaborative activities.

One of the things that Leslie, who is an industrial engineer for Dupont which has been an as-yet unsuccessful contender for the Baldrige Award, believes is that a process that is internally driven of setting standards is going to be much more effective than one that is externally driven. She even contemplates a time when perhaps AVET would become unnecessary as the internally driven process of establishing standards within the individual engineering colleges becomes adequate to determine the quality of the engineering programs. We are looking at perhaps what we together could do in this area.

Also, I have met with my opposite member in the business school association about collaborative programs in exchanging information that engineering students might have that would be useful to business schools and vice versa. One of the common themes was the issue of total quality management. So, we are looking at that as a possible mechanism of action as well.

Mr. **MACLOSKY**. At Lehigh University, each one of the programs has its own advisory board/advisory committee which is composed of representatives from the business community. I believe that they have had an opportunity to express their desire about how the curriculum ought to be modified to include some of these ideas. However, at a university and in higher education in general, I think that the faculty pretty much dominates what is going to be taught. So, I would think that you have to take many fronts. One front needs to be the advisory groups talking to the people in the university and also I think there needs to be external stimulus in terms of what I was referring to before as some sort of awards program which can hit them on all fronts, so they get the message.

Dr. **Carl**. If I may address the issue of text books, the schools are certainly their biggest customers and we, NCTM, have been really keeping the publishers involved in the whole process of our setting standards for quality mathematics programs, and they have been a part of our earliest discussions about the standards.

We have found over the recent years since the release of the curriculum and the evaluation standards, that the changes that we recommended are beginning to appear in the text books that were released for 1990 and 1991. If I may use my own State as an example, Texas adopts text books by State, as opposed to some places where a school can make that decision or a school district.

Of the books that were submitted by the publishers, who wanted to be a part of the process, we found that each one of the publishers testified to the fact that they had made a conscious effort to incorporate the changes that were made in the books to address the standards that had been released. We also found that in producing the change, the major thrust of those books was to move forward and focus on problem-solving, which was a critical issue for us that it be really developed and evolved throughout the book, as opposed to a page of problems at the end of a chapter.

The other thing that this whole process of text book adoption showed us what that the States throughout this country are beginning in the State agencies to set up recommendations for the proposed submission of requests to be on those lists to submit their books, that addressed the standards. That is how we have really been able to take such a giant step. That is the proclamation in Texas, ask for the standards as it was broken out across the grades. It meant that the text books would have to meet that, and they did.

Mr. **Valentine**. Dr. Carl, would your organization become involved in such questions as testing and grade of high school teachers and elementary school teachers, and longer school years and utilization of school facilities, and matters of that kind?

Dr. **Carl**. We are very much a part of all of the discussions that are taking place now on assessment, assessment of students, assessment of teachers in the sense that the evaluation process that occurs in schools is what makes teaching better and what helps children learn. So, the ways in which we look at an evaluation and professional development and all those aspects of it, we certainly are very much involved.

Mr. **Valentine**. Is your organization directly involved or indirectly involved in any kind of bargaining arrangements, fixing of school teacher's salaries?

Dr. **Carl**. No, we are not. We're not like a union or anything like that, no sir. It is not our role.

Mr. **Valentine**. This is what some of you have spawned. This is a page from a prominent eastern newspaper that talks about quality; defines quality for the 1990s. It has what would appear to be quality. These outfits didn't win any awards, but on here is Cadillac, Tiffany, though some of us and some of the staff are familiar with Tiffany because we passed by and looked in the window and Brooks Brothers. But I mention that kind of as a parting shot maybe because of what you and other panel members have done, and with a little help from Congress and hopefully politicians, maybe we have succeeded in focussing the attention of this country on quality and maybe it will take.

Thank you very much for your time and effort, and sharing this information with us. Is there anything else we need to do? The subcommittee will stand adjourned.

[Whereupon, at 4:15 p.m., the subcommittee adjourned, to reconvene at the call of the Chair.]

APPENDIX I

The John F. Kennedy Center for the Performing Arts

WASHINGTON, D.C. 20566-0001
202 416-8000
FAX 202 416-8205

Comments of
James D. Wolfensohn, Chairman

The John F. Kennedy Center for the Performing Arts

submitted to the hearing record of April 23, 1991
Malcolm Baldrige National Quality Award

before the

House Committee on Science, Space and Technology
Subcommittee on Technology and Competitiveness
The Honorable Tim Valentine, Chairman

I am pleased to be offered the opportunity to submit comments to the House Subcommittee on Technology and Competitiveness on the topic of the Malcolm Baldrige National Quality Award.

I offer these comments as Chairman of the Board of the John F. Kennedy Center for the Performing Arts, a nonprofit organization currently ineligible to compete for the Baldrige Award under existing criteria. I want both to offer my opinions on the subject of nonprofit eligiblity and to present to this panel the Kennedy Center's vision to make quality our central operating principle.

The Kennedy Center was built on a dream--a dream to create, in America's capital city, a national performing arts center to rival any other in the world. It would honor and encourage our country's most gifted artists, teach our children the value of beauty, and carry the message and the joy of the arts to all Americans.

Today it is the dream of the Kennedy Center to set new standards of excellence in the presentation of the arts and to be the best managed cultural organization in this country.

One year ago we set out to realize this new dream--and we have made significant progress to this end.

We have completed a thorough management study and have undertaken a reorganization that will reshape our administration, enlarge the role of community arts leaders, enhance the role of our board of directors and create a multi-disciplinary artistic programming committee. We have used the Baldrige Award criteria to guide us throughout this rigorous self-assessment.

At the same time, we are working to develop model education programs that will benefit not just our children, but our children's children. We are undergoing a careful review of all Kennedy Center education programs with plans to build on the most successful programs and advance them as models for cultural institutions throughout the United States.

Central to our vision for the Kennedy Center is quality--quality in programming, in management, in our relationship with patrons and donors, the community, other institutions, and the nation.

The Kennedy Center is aiming to achieve a level of customer service commensurate with the Kennedy Center's high artistic standards.

We want everyone who has been involved at the Kennedy Center as a ticketholder, a volunteer, a staff member, a donor, a teacher attending workshops--everyone who visits us to experience in some way our commitment to quality, our vision to be the very best.

Our reward will be in setting and meeting the highest goals for customer service, efficiency, accountability and administrative excellence. We are hopeful that private financial support and increased ticket sales will follow.

Still, I believe that the possibility of achieving national recognition as an institution abiding by the highest quality standards is a powerful motivating tool. The Baldrige examination process, for example, would provide documentation and confirmation of our efforts to achieve excellence that could serve as a model for other performing arts and cultural institutions.

For a nonprofit organization, and certainly for a cultural organization like the Kennedy Center, recognition on the order of the Baldrige Award would almost certainly boost private gifts and provide unequivocal prestige, making possible national and international tours and partnerships that would convey excellence in American culture to the rest of the world.

Section 16(b) of P.L. 101-107, which established the Baldrige Award, references the discretion of the President or the Secretary to periodically present the award to organizations that have substantially benefited the social well being of the United States. It is my judgment that expansion of the eligiblity critieria to include nonprofits would encourage organizations such as the Kennedy Center to adopt the principles of total quality management and would allow the President to recognize and reward nonprofits that make significant contributions to the social and cultural well being of the country.

The nonprofit and public sectors have much to learn from the best organizations in the private sector about quality, productivity, and efficiency.

It is my conviction that the Baldrige Award will reach its full potential as an instrument of positive change when nonprofit, as well as for-profit organizations are eligible to compete for the Award.

It is my understanding from Dr. Curt Reimann's April 23 testimony before this subcommittee that the National Institute of Standards and Technology Board of Overseers will be studying the possiblity of expanding the Award eligibility categories over the next several months.

I want to offer the strongest possible encouragement of the inclusion of nonprofit organizations in the eligible categories.

The Kennedy Center is already commited to meeting the Baldrige Award criteria of excellence. We look forward to the possiblity of being judged on our success in meeting those criteria.

APPENDIX II

AMERICAN SOCIETY FOR
TRAINING AND DEVELOPMENT

1640 King Street
Box 1443
Alexandria, VA 22313-2043

703-683-8100
FAX 703-683-8103

STATEMENT OF

ANTHONY PATRICK CARNEVALE
VICE PRESIDENT OF NATIONAL AFFAIRS AND CHIEF ECONOMIST

THE AMERICAN SOCIETY FOR TRAINING AND DEVELOPMENT

AMERICA AND THE NEW ECONOMY: QUALITY AND BEYOND

SUBMITTED TO THE

SUBCOMMITTEE ON TECHNOLOGY AND COMPETITIVENESS
HOUSE COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY

APRIL 23, 1991

CONGRESSMAN TIM VALENTINE

CHAIRMAN

Put Quality To Work

TRAIN AMERICA'S WORKFORCE

Introduction

The extensive field research reported in this study finds American employers and employees working together to build more flexible organizations, work processes, and skills in order to meet new competitive standards and fully utilize new technologies. The findings reported in *America and The New Economy* describe an emerging economic order founded on a whole new set of competitive standards that are transforming organizations, jobs, and skills requirements. In the past American employers and workers competed for customers on the basis of productivity -- the ability to produce high volumes of goods and services at low prices. In the new economy competitive advantage is based not only on productivity but also on the ability of American employers and workers to meet new standards of quality, variety, customization, convenience, and timeliness. In order to meet new market standards and fully exploit the inherent power of new technologies, authority and resources are being pushed down the line to work teams that make products and serve customers.

The challenge to business, labor, education, and governmental leaders implicit in this firsthand report from America's workplaces is to work together to empower all Americans with the toolkit of skills and family support that will enable them to take full advantage of freedoms and opportunities presented in the new work environment. The good news for American workers in this report is that the economy it describes is an open invitation to take charge of their own economic destiny by developing skills critical to success in the new economy.

America and The New Economy summarizes what was learned from almost five years of first hand exploration in the new world of work. It is the written record of field work and statistical analysis that began in the mid-eighties when it became obvious to the nation's leadership in business, labor and government, that something profoundly different was happening in the American economy. At that time, a bewildering array of opinions emerged on the American economic prospect. Some of the more pessimistic perspectives on our economic future were quite frightening for Americans, both as workers and parents. Also, as opinions on the nation's economic prospects diverged and multiplied, it became increasingly difficult for American business, labor, education, and governmental leaders to find enough common ground to form a cohesive response to economic changes. This study was initiated to investigate the validity of some of the more alarming claims. It was also intended to help build a common understanding of economic change among business, labor, education, and governmental leadership that would allow more effective collaboration in the interest of the nation's economic competitiveness and to promote opportunity for all Americans. The results of the study suggest no cause for panic over the nation's economic prospect. But findings do suggest the need for concerted action in response to unprecedented economic changes.

This report provides a map of the new economy that can be used as a guide to action by the nation's business, labor, education, and governmental leaders as they work together in the new economic environment. It is also intended to inform individuals as they plan their own careers. *America and The New Economy* maps the real economy of organizations and workers, and not the statistical economy so often the focus of debate in Washington. It reports the best competitive practices in real companies and among real workers that are both models of excellence and causes for optimism in assessing the nation's competitive future.

America and The New Economy

The Six Standards For Competitive Success

The distinctive signature of the new economy is a set of new competitive standards that separate winners from losers. Productivity the primary competitive standard in the old economy, has been transformed and joined by an expanded set of standards critical to success in the new economic environment. The new competitive standards include a more robust version of the traditional productivity standard; the ability to provide variety and to customize products and services; a focus on convenience for customers; and, timely innovation:

Robust Productivity: In the old economy market share and competitive advantage were driven by producing high volumes and selling at low prices. The old time religion of productivity emphasized cost cutting as the principle means to the achievement of low prices. In the new economy cost efficiency is still important but productivity gains are increasingly realized with an emphasis on investment and innovation rather than cost cutting. Old fashioned strategies for achieving productivity emphasized "lean and mean" organizations and workforces. Lean and mean organizations and workforces can result in cost savings but are not sufficiently robust to provide quality, flexibility, customer service, and speed, also necessary in the new competitive environment. In the new economy, the old time religion of cost cutting has been displaced by productivity strategies that depend on "robust" organizations and workforces empowered with autonomy and enabled with investment.

We are still ahead in the productivity race. The U.S. produced $20,891 per person in 1989. Our closest competitors the Canadians produced $19,679 per person. The Japanese were fourth with $15,656 in output per person. But our competitors are catching up. The Canadians went from 69.5% of American productivity in 1950 to 94.2% of American productivity in 1989. The Japanese went from 16.1% of American productivity in 1950 to 74.9% of American productivity in 1989.

The American prospect on productivity suggests guarded optimism:

- We will need productivity performance somewhere between 2.5% to assure our continued leadership. Although our recent performance has hovered around a disappointing 1.0%, projections of future productivity performance are more optimistic. In addition, there is evidence to suggest that manufacturing productivity in the U.S. is approaching levels in Japan and Europe already. Moreover, our productivity performance in agriculture, services, and other non-manufacturing industries is superior to many of our competitors.

- We have already paid the price of integrating the inexperienced baby boom into the workforce. The American workforce is aging and becoming more experienced every year. We should continue to realize productivity dividends from a more experienced workforce well into the next century.

- Our gloomy demographic prospects have been overstated. It is true that our entry level workforce will decline in size and that an increasing share of new workers will be drawn from populations in which our human capital investments, prior to work, are insufficient to allow them to meet increasingly stringent competitive standards. But there is time. Employers are not likely to be overwhelmed by scarce workers or unprepared workers any time soon. Changes in the mix of new workers will be incremental. For instance, between now and the year 2000 the largest single group of new workers will continue to be white men and women who will comprise 32% and 35% of new workers respectively.

- Capital drawn down since the late forties to bear, educate, house, and train the baby boom is now available for more productive investment. The demographic demand for housing, for instance, is expected to decline by a full 30% over the foreseeable future.

- New information and communications technologies are still in their infancy. We are still in the primitive phases of developing and applying these new technologies. The application of technical changes usually takes a long time. Electricity was available after 1860 but was not in common use until the 1920s and the sale of steam engines did not peak until the early 1900s.

- America's savings performance since the early eighties has not been good as a result of increased consumption and dissaving resulting from high government deficits. As saving declines there is less money available for investment and what savings there are go to pay debts accruing as a result of high deficits. While constant pressure on deficits to free up available savings for productive investment is critical, its importance is often overstated. Savings did not decline in the U.S. until the eighties, while precipitous productivity declines began almost ten years earlier, in the early seventies. Moreover, detailed studies by Denison, and more recently by Baumol, show that investment accounts for a healthy 40% of productivity increases but that almost 60% of productivity increases result from innovations at work or process improvements that occur as organizations and workers make incremental improvements on the job. In other words, the principle lever for productivity improvement is not higher levels of investment but learning, that occurs in work organizations and work teams deep within the economy itself. Finally, opportunity drives investment at least as much as savings. So long as American workers, organizations, and technologies represent good prospects for investment, foreign savings will continue to be invested here.

Quality: Quality is primary among the new competitive standards. It was no accident that when the nation established its first award for overall economic excellence it was an award for quality, not productivity. American performance on quality is mixed. The quality of our automobiles is on a par with the Europeans but still inferior to Japanese quality in most instances. Quality data on textiles, computer chips, and steel is mixed, and quality performance in consumer electronics, chemicals, and machine tools is disappointing. There is still such a thing as American quality. We set the world standard in commercial aircraft, aerospace, large computers, appliances, and health care. There are also individual quality leaders even in industries where our overall performance is mixed. For instance, the GM/Toyota NUMMI plant in auto, Milliken Mills in textiles, Harley in motor cycles.

Variety and Customization: Plain vanilla isn't good enough in the new economy. There is an explosion of products and services in every industry. There are 572 varieties of cars, trucks, and vans compared with 408 only nine years ago. Banking has become financial services, expanding from a few to more than a hundred services which can be delivered in customized packages for individual consumers. The number of items carried on supermarket shelves has double in just ten years as the food industry has learned to tailor products to every taste and diet.

Convenience and Customer Service: Busy people crave convenience. Providing convenience is good business. First there was fast food and now there is food delivered fast. Financial services companies have embedded convenience in new technologies with the ATM machines and electronic banking. Good customer service pays off. It costs five times as much to get a new customer as it does to keep the one you already have. Loyal customer is worth $140,000 over a lifetime to an auto maker and $ 4,400 a year to a supermarket. Every unhappy customer complains to ten others and 82% of customers that go elsewhere do so because they are dissatisfied with the product or service or feel they have been treated badly. Available evidence suggests that Americans are demanding better customer service and feel they aren't getting it. There are notable exceptions. WalMart, the Aid Association for Lutherans, Nordstroms, Federal Express, Motorola, Xerox, and IBM and a host of others, lead the way in customer service in American markets.

Timeliness: The early bird gets market share in the new economy. According to one study of hi-tech markets, products that come out on time, but over budget, earn 33% less than products that come to market at budget but six months late.

Institutions compete in several successive races against the clock:

- First Event: Develop an innovation, whether a product, a new technology, or a new work process.
- Second Race: Move the initial innovation off the drawing boards and into the hands of customers.
- Third Event: Race up the learning curve, making continuous improvements and developing new applications.
- Final Event: Use the knowledge accumulated in the race up the learning curve to make a breakthrough to another major innovation.

The American performance on timeliness is mixed. For instance, Japanese auto makers redesign every four years while we still try to make a basic design work for more than ten years. As a rule, it takes us up to sixty-six weeks to get from fiber to apparel while many of our competitors are able to reach the customer in twenty-three weeks. The news on the ability of American employers to outrun the competition is not all bad. We are the fastest to the market in aerospace, computers, appliances, and health care. There are individual examples of speedy institutions in every industry; Milliken in textiles, WalMart in retail, Motorola, Xerox, and Hewlitt Packard in hi-tech.

Seven Forces That Shape New Markets

The report discusses seven forces that are driving changes in competitive standards including:

(1) The Increasing Wealth of Nations: People are demanding productivity, quality, variety, customization, convenience, and timeliness to meet higher standards. American incomes doubled between the end of World War II and the early seventies, though they have grown more slowly

since. American families have increased their incomes since the early seventies by working more, putting more family members to work, and borrowing. Incomes in the rest of the world were relatively low in the late forties but increased astronomically since then. West Germans made only 40% of American incomes in 1950 but made almost ninety percent of American family income by the late eighties. The average Japanese family made only 17% of what American families made in the late fifties but made almost eighty percent of average family income in the U.S. by the latter eighties.

(2) Economic Globalizations: The genie of international trade has long been out of the bottle. The combined value of imports and exports are roughly a quarter of our GNP. We now compete in international markets for technology. Tastes have been homogenizing rapidly as income and the reach of markets expand. Trade barriers have been reduced significantly since the fifties. Advances in the technologies of transport, communications, and management have allowed companies to produce and sell flexible volumes tailored to individual markets. Companies no longer go overseas for cheap labor. Labor has become a small portion of costs in leading industries. It approaches 10% of costs in hi-tech manufacturing and little more than 15% of total cost in low-tech manufacturing. Increasingly, companies go overseas to access technical skills, new technologies, and experience with indigenous markets. Perhaps the most important effect of the new global economy is that it has intensified and upped the ante in economic competition. If we don't supply quality, variety, customization, convenience, and timeliness at reasonable prices somebody else will and that somebody else is likely to be located outside the U.S.

(3) The Diversification of Taste: There is no one size fits all in the new economy. Consumers worldwide have more money in their pocket and want goods and services tailored to their individual needs. In addition, growing wealth gives a voice to underlying differences in tastes of different age groups, regions, life styles and other differences that were there all along.

(4) The Importance of Time: Americans, especially American women, have more money but less time to spend it. Men have lost more than two hours of their free time per week and are spending an hour and a half per week doing personal chores. Women are working an additional six hours per week and have lost almost three and a half hours of free time. Busy people have neither time nor patience for shoddy quality, products that are not tailored to their individual needs, poor customer service or slow response times.

(5) Commercialization: More and more of the work and play traditionally provided outside markets is being commercialized. The commercialization of homemaking, recreation, and

personal care stems in part from the new work roles for women. Child care, elder care, and cleaning have traditionally been services performed by women who didn't work or who worked one shift on the job and another at home. Increased choices for women and financial pressures on the American family suggest that the commercialization of services traditionally provided through the family structure will continue. Americans are also more willing to pay for play. Recreation for Americans of all ages is increasingly delivered for profit whether in retirement communities or in recreational service for younger working Americans. Commercialization impacts on both service and manufacturing industries as the delivery of family and recreational services mixes human contact with an expanding array of gadgets for cooking, cleaning, personal care, home entertainment, and recreation outside the home. Commercialization inevitably expands market standards beyond price competition. For example, price is not the only criterion for choosing care for our loved ones. When we shop for personal care we want quality, a variety of choices, care customized to our personal needs, timely delivery of services, and convenience.

(6) Consumer Involvement: A distinctive feature of the product and service markets of the new economy is the extent of consumer participation. For instance, shoppers at supermarkets read labels for quality and content customized to individual diets. User friendly gadgets, from VCRs to ATMs, allow consumers incredible variety of choices tailored to individual needs and delivered conveniently. Self service at the gas pump is convenient and the salad bar tailors the restaurants offerings. The consumer is increasingly a member of the work team.

(7) Flexible Technologies: The new market standards would not have been possible without an equally new role for technology. Flexible computer based and communications technologies are at the heart of the new competitive standards. The computer has brought a whole new level of quality, flexibility, and speed to production and service delivery. Variety and customization can be delivered conveniently and with precise quality with a few keystrokes. Faxes, satellites, cable, and other communications technologies give the new competitive standards a global reach. User friendly software makes the new technology as invisible to the user as the carburetor is to most drivers.

The New Competitive Framework

The new competitive standards are birds of a feather. They are best understood as a framework in which each standard makes sense only in the context of the others. Each is connected to the others in a flexible and organic whole. Employers who begin pursuing one standard usually end up embracing them all because each overlaps and leads on to the next.

The new competitive framework breaks the iron laws of mass production that ruled the old economy. In the old economy it was generally presumed that there was a tradeoff between productivity and low prices on the one hand and quality, variety, customization, and convenience on the other hand. It was generally believed that producing high volumes of standardized goods reduced costs and raised productivity. Adding quality, variety, customization, and customer service was assumed to increase cost. For instance, one rule of thumb said that cutting variety by half raised productivity by 30% and that doubling volumes cut costs by 25%. The iron law that linked high volumes of standardized goods with low prices has been broken in the new economy. For example, one U.S. manufacturer of automobile components produces ten million parts per year and offers eleven varieties. This company's Japanese competitor produces only three and a half million units per year but offers thirty-eight different varieties. Remarkably, with one third the scale of production and three times the variety, the Japanese company has a labor productivity one and a half times the American company and produces at half the unit cost.

Companies that begin by trying to speed up the time it takes to get products to the customer usually end up saving money as well. Hewlitt Packard's just-in-time production system has reduced cost by 20%. Harley Davidson reduced the time it took to make a motorcycle from thirty to three days and cut production costs by half.

Quality also saves money and is often the best antidote for a case of low productivity. The typical factory invests twenty to twenty five percent of its operating budget finding and fixing mistakes. Xerox's quality program drove costs down by 20%. GM's Lansing assembly plant drove costs down by 21% after instituting a quality program.

Focusing on good customer service also improves productivity performance. The Aid Association for Lutherans replaced specialized functional departments in its insurance services with-teams responsible for providing service to individual regions. As a result, personnel costs were cut by 10%, the overall number of cases handled increased by 10% and the time it took to process a case was reduced by 75%.

Continuous Learning: The Cornerstone of Economic Progress

In the new economy technology is treated as malleable and inextricably connected to human and organizational forces at work. It is generally understood that technical investments without complementary investments in organizations and people can be disastrous. The dynamic of economic change inside the organization is both social and technical. The processes of technical and economic progress in the new economy are driven by learning. The cumulative dynamic of learning in the new economy tends to confer runaway momentum in the competitive race. Once organizations or whole nations build a lead in a particular technology or product or service line it is difficult for others to catch up in the race up the learning curve. Some learning can be copied or reverse engineered but the more experiential kinds of learning critical to economic and technical progress are difficult and time consuming. For instance, experience is the best teacher when workers require applied skills like problem solving that can only be learned in the context of real world situations or skills like team work that require fundamental attitudinal changes.

Oftentimes the process of economic and technical change is "path dependant" - characterized by incremental changes with one innovation leading to another. In the early stages of technical or economic innovation several alternative paths are open. Eventually, a particular innovation is widely adopted. Once adopted, learning by doing and learning by using leads to the accumulation of incremental improvements. Complementary innovations and commercial investments also accumulate, until eventually the momentum and sunk costs commits the organization and even whole industries to a particular technical path. It is difficult to change paths once the process of accumulation reaches a critical mass that allows for a self reinforcing momentum even when superior alternatives emerge. Moreover, it is difficult to access particular paths of technical development once they are fully developed.

There are some short cuts for those who join a particular developmental path once it has become a beaten track. To an extent, state-of-the-art practices can be borrowed and copied. But much of the learning by doing and learning by using that accumulates along a particular developmental path is not easily copied, except through experience. For instance, Americans can describe Japanese quality and methods but have difficulty emulating them because they presume profound attitudinal and institutional changes that can only be arrived at experientially. Workers can be taught sufficient skills to produce quality but even competent employees do shoddy work. The real skill required to produce quality is the ability to take responsibility for final products or services. This means workers need to take responsibility for more than their own job assignment or work effort. Before workers can take responsibility for quality they need to be empowered to exercise a higher level of responsibility and they need to make profound changes in their own attitudes and commitments at work. These kind of profound organizational and individual changes are not easily copied. They take time and are learned through experience. Hence, we can understand Japanese quality rationally without knowing it subjectively. We can understand the state-of-the-art along a particular developmental path but getting from here to there requires time consuming experiential learning.

The cumulative nature of technical and economic change can be troublesome especially when it leads down suboptimal paths or arrives at dead ends. Alternative paths are usually long since overgrown and alternatives, new or old, are warded off by sunk costs in the current technology. Our current dependency on oil based technologies is a case in point. At the turn of the century steam was a viable alternative to internal combustion. But switching to steam at this late date is not likely. First, we are unsure if steam represents a viable alternative. It would take more time than we can afford to learn our way into a steam-based technology that could perform as well as oil-based technologies. Second, we don't have the complementary industrial, financial, and human assets available to support a steam-based technology.

There are many other examples of the path dependant nature of technical change:

- Early investments by the military and subsequent development gave an early lead to water-cooled nuclear reactors in the sixties and fixed the path of development in the industry. Subsequent research suggests that gas cooled reactors might have been better.

- The British continued to build narrow gauge tracks long after it was demonstrated that wider tracks were more efficient. Changing any section of the railroad track changing the whole world require rail system as well as the width of the trains that ran on the track.

- The "QWERTY" keyboard, named for the upper row of left hand keys, persists despite superior alternatives. The British still drive on the wrong side of the road.

- The world is still divided into 110v and 220v nations.

- The Irish stayed in potatoes until famine drove them from their homeland.

- We use VHS because it built up a critical mass of distributors, not because it is superior to BETA.

- The U.S. Chose hydraulics as the core technology in robotics and the Japanese chose electronics. The Japanese path proved the high road.

It is critical for organizations, industries and whole nations to choose optimal paths of technical development. Dead ends and suboptimal paths can be costly in human welfare. If a nation decides to make potato chips rather than computer chips it will give away good paying jobs and sacrifice important technical and organizational learning as well as skill development that would lead on to spill over benefits in other industries and even better jobs later on. The new economy suggests a bicycle theory of economic development: Get on the right technical path and keep pedaling. If you leave the path, you will only have to catch up later. And by then it may be too late because your competitors will have built up an insurmountable lead in accumulated experiential learning.

How do organizations or even nations choose the optimal path of technical progress? The basic difficulty is that we never know enough about the future to make the right bets and pick the winners. The path dependant nature of learning processes turns economic progress into a game of chance. It leaves us with two strategies: First, we need to mobilize our current knowledge base as best we can to discern best bets on the most likely winners. Second, we need to spread our bets around, encouraging as many alternative paths as possible without diluting our available financial, organizational and human capital. Both strategies argue for maximum access to a free flow of knowledge in organizations, nations, and in the global economy.

The New Economic Life Cycle

Technologies, products and services are constantly evolving, following a path not dissimilar from organic life cycles. Traditionally, economic life cycles have exhibited five separable phases: innovation, installation, competition, maturity, and eventual breakthrough to new life cycle. In the new economy, however, economic life cycles have sped up and lost their sequential structure. The life cycle of innovations in work processes, technologies, products and services in the new economy are open ended and less orderly then the classic sequence of innovation. For example, today's global institutions sometimes skip the initial development of innovations. Instead they often borrow innovations developed elsewhere focusing on the latter more commercial phases of the economic cycle.

In the classic economic life cycle there is a tendency to require flexibility only from senior white collar and technical elites and only in the initial innovative phases of the life cycle of particular innovations. In the new economy, however, it is becoming clear that a workforce segmented into broadly skilled and empowered elites and narrowly skilled nonsupervisory employees with limited autonomy can result in costly delays in installing innovations, making continuous improvements and learning new applications. Moreover, economic cycles are speeding up as competition intensifies. As a result, employees at all levels need greater autonomy and the skills to use it effectively in order to expedite the cycle time required to get innovations off the drawing board and into the hands of customers ahead of the competition.

Organizing and Managing The New Economy

The new economy is preceded by two typical organizational structures: Large top-down hierarchies characteristic of big business and big government and small organizations typical in small business, the professions and highly fragmented industries like health care. Large organizations have their virtues. Their size and allows them to afford to mobilize capital, conduct R&D, train their workers, and realize scale economies that ultimately translate into low prices for consumers. Their top-down rigidity, however, has made them less able to provide variety, customization, convenience, and speed. Smaller organizations in small businesses have their traditional merits as well. They have been generally more able than large institutions, to provide quality and products and services tailored to the needs of individual customers. At the same time, however, their small size and isolation have discouraged productivity and a consistent quality of product or service delivered.

Both the large scale behemoths and smaller organizations have been challenged in the new competitive environment. Large scale organizations are learning many of the virtues that are the hallmark of smaller organizations. They now emphasize quality as well as high volumes and low cost in production and service delivery. In addition, large organizations are shedding some of their traditional rigidity in order to produce in flexible volumes, provide a greater variety of products and services, accelerate innovate processes and effectively utilize flexible technologies. Large organizations are moving away from the one size fits all approach to customers. Big organizations are also becoming more sensitive to individual customers by tailoring products and services and providing convenience.

The shape of large scale institutions is changing in response to new competitive demands. They are flattening hierarchies and pushing autonomy down the line empowering workers at the point of production, service delivery, and at the interface with the customer. At the same time, smaller organizations are retaining their independence while joining together to realize scale economies. By joining together they can afford more R&D share the costs of human and machine capital development. By working together they are also able to reduce costs and provide both lower prices and a more consistent quality of output.

Organizations large and small are moving toward a common organizational format that combines the strengths of large and small institutions. That new organizational format is best described as a network. The networks of the new economy are driven by common goals and outcome standards rather than top-down authority. They preserve balance between the autonomy of individuals and teams at work and the integration of interdependent network partners in pursuit of common goals.

Networks are nested one inside the next. The primary network is the work team. Task forces and project teams are examples of networks that cut across the functional divisions in organizations. Every organization is a member of a network made up of other organizations that are its suppliers, customers, financial backers, and regulators. The success of individual organizations in a network ultimately depends on the performance of the network as a whole.

Jobs And The New Economy

Although the new economy will likely create jobs in the aggregate, the processes of economic change will inevitably distribute new jobs unevenly. The new economy will bring good jobs for the vast majority, bad jobs for some, and no jobs at all for others. As a community we are challenged to redress the unequal benefits and burdens characteristic of economic. Ours is a society based on work. A job is the price of admission to the American polity and culture. People unable to get and keep a job eventually disappear from community life, drop out of the political system and fall into the underground economy. Indeed, sustained joblessness eventually encourages those locked out of the economy to create alternative economies and cultures that are a threat to the mainstream American way of life. The same destructive processes are at work for both the chronically unemployed and the dislocated experienced worker. There is no fit measure that allows us to choose between these two groups. The chronically unemployed usually start out and end up at the bottom of the economic heap for lack of skills and the opportunities skill provides. Dislocated employees experience an economic loss that rarely results in persistent poverty but involves an equal amount of suffering. In the case of the dislocated employee it's not so much where they land as how far they fall that hurts.

Looking beyond the aggregate numbers to the kinds of jobs the new economy is generating reveals a pattern fitted to the emerging demands of the new competitive standards and networks. The most noticeable trend in the kinds of jobs typical of the new economy is the shift toward service work. There are many reasons for the shift toward service work. Consumer demand shifts toward services as income increases. Higher productivity in manufacturing and extractive industries results in more output from fewer more highly skilled workers in combination with more powerful technologies. New competitive standards require more service workers to design, develop, and market a greater variety of products and to deliver them to customers quickly and conveniently in a global market. The increasing number of transactions among complex economic networks also encourages demand for service workers ranging from sales and customer service personnel to lawyers and accountants.

Skill leverages job opportunity in the new economy. People who stay in school have always had an advantage at work, but they are doing better now than ever before. In 1978 a college graduate with ten years of work experience earned 38% more than a high school graduate with ten years work experience. By 1988 male college graduates earned 86% more than males with only high school degrees. Female college graduates earned 60% more than their counterparts with high school degrees. People with two year degrees earned almost - more than high school grads. Those who got some training from their employers increased their earnings advantage by another 30%.

Skill In The New Economy

American employees are developing new skills in response to new competitive standards, technologies, and work organizations. Skill requirements are expanding up and down the line as competitive advantage draws on the skills of both college educated white collar and technical workers and noncollege employees who tend to be concentrated at the point of production, service delivery, and at the interface with the customer. Skill requirements in the new economy are concentrated in six areas:

The Academic Basics: Reading, Writing, and Computation

Reading skills needed for work are developed on three levels: (1) basic literacy--the ability to decode and comprehend written material; (2) reading-to-do--the ability to utilize basic reading skills, short-term memory, and information processing to locate printed information for immediate use; and (3) reading-to-learn and reading-to-do--the ability to use basic literacy skills in conjunction with long-term memory and writing, computation, learning, adaptability, and job-specific skills in order to decode, problem solve, or troubleshoot.

On average, American workers spend from 1.5 to 2 hours every working day reading forms, charts, manuals, electronic display screens, and general literature. In the new economy, reading skill requirements will increase and deepen because the growing complexity and scale of global economic activity will require more written communication. Also, the expanding reach and complexity of electronic and organizational networks will require more reading to stay in touch. Better reading skills will be needed to stay abreast of change, foster incremental improvements, and accelerate innovation. In addition, the infusion of information technologies will require more reading from operating and repair manuals and electronic screens.

In all cases, individuals must be able to apply reading skills in the context of a task or job responsibility; competency is measured by performance of a task rather than by direct tests of reading ability. At work, people decode forms, phrases, and abbreviated technical language, not the fully developed information they learned to read at school. Comprehension at work requires the ability to understand written cues. Therefore, standards for reading skills at work need to be set after assessing the context in which these skills are to be applied.

Writing at work involves a two-stage process: (1) prewriting--topic selection, preparation, and accessing and organizing information; and (2) writing--spelling, penmanship, reading, editing, and revising. Rapid change and the growing complexity of information networks inside and outside organizations require better writing skills from a growing share of American workers. Only about 8.4 percent of the average employee's communicating time is spent writing, yet writing is most often used at critical junctures in the work process. Written communications become part of a relatively permanent information base; they are shared and used to inform and guide people inside and outside organizations over time. Inaccurate or unclear writing can pollute the shared information base and affect the quality and efficiency of work upstream and downstream.

The essential standards for writing at work are brevity, clarity, and accuracy. Most writing at work involves transcribing key terms and standard sentences: 42 percent involves filling out prepared forms; 25 percent requires recording, summarizing, or using language peculiar to specific occupations and jobs; 23 percent involves writing memos and letters; and only 10 percent is dedicated to writing academic-style reports and articles. Therefore, an individual's mastery of writing on the job is tied to work-related competencies.

There are five elements of computational skill required at work: (1) quantification--the ability to read and write numbers, put numbers in sequence, and recognize whether one number is larger or smaller than another; (2) computing--the ability to add, subtract, multiply, and divide; (3) measurement and estimation--the ability to measure time, distance, length, volume, height, weight, velocity, and speed and use such measurements; (4) quantitative comprehension--the ability to organize data into quantitative formats; and (5) quantitative problem solving--the ability to recognize and set up the problem and compute the answer.

New organizational, competitive, and technical requirements at work require higher computational skill levels. Flexible and decentralized organizations and networks are becoming integrated by complex, shared information systems that rely on quantitative measures of markets, performance, and quality. Products and services are increasingly customized, requiring employees to constantly reset quantities and dimensions for production and delivery. New flexible technologies and software require mathematical skill to utilize their logically patterned capabilities fully.

Almost 75 percent of Americans are computationally literate. Most Americans know how to quantify, compute, and measure, but can't apply what they know. As a result, workplace computational skills are best taught in an applied fashion. In school, mathematics is taught as an end in itself, as a sequence of operations from the simplest to most complex, followed by drill and practice on the mathematical operations themselves. Tests are standardized and emphasize proficiency in separate operations. At work, computational skills focus less on the correct performance of mathematical operations and more on using math to solve problems. Curriculums should emphasize:

- selection and use of mathematical operations to solve particular work-related problems and
- contextual examples of possible job situations.

Ultimately, grade equivalents are only clues to job-related computational skill needs. The requirements vary by occupation, although all employees should be able to organize information into quantitative formats, select appropriate computational tools, and recognize errors resulting from inappropriate use of quantitative operations.

Learning to Learn

Knowing how to learn is the most basic of all skills because it is the key that unlocks future success. Learning to learn involves knowing the principles and methods that allow us to perform in three domains: (1) the cognitive domain of skills we use to collect, know, and comprehend information; (2) the psychomotor domain of skills we use to control our bodies in order to accomplish tasks; and (3) the affective domain of skills we use to know, understand, and respond to feelings and behaviors.

Equipped with this skill, an individual can achieve competency in all other basic workplace skills. Learning skills are required in order to respond flexibly and quickly to technical and organizational change; make continuous improvements in quality, efficiency, and speed; and develop new applications for existing technologies, products, and services.

Communication: Speaking and Listening

In the new economy, workers spend most of their day engaged in some form of communication. Reading and writing are essential communication tools, but it is through listening or speaking that we interact most frequently at work. The average worker spends 8.4 percent of his or her communication time at work writing, 13.3 percent reading, 23.0 percent speaking, and 55.0 percent listening (Carnevale, Gainer, and Meltzer, 1990).

The competitive standards of the new economy require effective communication skills. For instance, to ensure high quality, employees must take responsibility for final products and services, which means they have to be able to communicate with others upstream and downstream in the work process. In addition, new standards for speed and reduced cycle time require quick and informal communication. Variety and customization require fluid communication in order to switch from one product or service design to the next. Improvements in customer service also require effective communication skills. Moreover, new organizational formats and technologies also require better communication skills. Flexible networks rely on communication in order to integrate work efforts effectively. As new technologies take on repetitive physical and intellectual tasks, employees will spend more time communicating with co-workers and customers. Speaking skills needed for work can be broken down into three areas: (1) nonverbal skills--body language and appearance, which deliver 55 percent of the meaning in face-to-face communication; (2) vocal skills--rate, pitch, and loudness, which transmit 38 percent of the message in face-to-face communication and 70 percent to 90 percent of the message over the telephone; and (3) verbal skills--language, which transmits only 7 percent of the message, but tends to be worth more later, when the listener gets past nonverbal and vocal characteristics in the communication process. Listening skills for work involve receiving and assigning meaning to aural stimuli.

Adaptability: Problem Solving and Creative Thinking

An organization's ability to overcome barriers to achieve productivity and quality improvements; to develop new applications for existing technologies, products, and services; and to manage variety and customization of products and services depends on the problem-solving and creative abilities of its employees. In addition, new flexible organizational formats require equally flexible workers and work teams capable of solving problems on their own. Moreover, as technology takes on repetitive work, workers spend more of their time using their problem-solving and creativity skills to handle exceptions to routine mental and physical tasks.

Problem solving is the ability to bridge the gap between what is and what ought to be. Problem-solving skills include the ability to recognize and define problems, invent and implement solutions, and track and evaluate results. The ability to solve problems involves a significant measure of creativity. Creativity is a continuum of thinking and application including (1) creative thinking--breaking traditional patterns of thought, (2) inventiveness--turning a creative idea into practical applications, and (3) innovation--applying a creative idea.

Developmental Skills: Self Esteem, Goal Setting, Motivation, and Personal and Career Development

Self-esteem skills needed for work are based on the ability to maintain a realistic and positive self-image. A positive self-image gives an individual a firm foundation to reach maximum potential both on and off the job. New and more intense standards for organizational performance require each employee to have a strong, positive sense of self. Accepting responsibility for organizational performance beyond one's formal work assignment is necessary to ensure high quality and requires a positive self-image. Self- esteem is also necessary to manage the growing intensity of interaction with co-workers and customers. Increased personal autonomy requires self-confident workers. Overall, the capacity to cope with the fast pace of change at work demands employees who are confident in their own abilities.

Motivation at work involves ability to translate work into an instrument for the development of the self and the realization of potential. Goal setting is the ability to set performance targets that are consistent with goals for personal development. Motivation and goal setting are inextricably intertwined. Motivation inspires goal setting and goal setting clarifies and connects us to our deepest motivations.

The velocity of change is accelerating at work. Flexible organizations and technologies are giving workers more autonomy and increasing the intensity of interaction among co-workers and between employees and customers. These changes require that employees become personally and actively engaged on the job. In addition, as the locus of responsibility for overall performance resides more with the individual, employees must assume responsibility for motivating themselves and setting goals. Personal and career development skills allow individuals to adapt to changing work requirements in a way that ensures employment security and fulfills personal potential.

New requirements for competitive, organizational, and technical flexibility have reduced job stability. Employees should expect to have to change as job requirements change. Lifetime employment in the same job or even with the same employer is no longer a realistic expectation. As a result, self-conscious personal and career development is central to employment security as well as individual development and career success.

Group Effectiveness: Interpersonal Skills, Negotiation, and Teamwork

Work is a group activity. Throughout the postwar era, economists have observed that the major share of productivity improvements results from the ability of work groups to use their human and technical capital more effectively to move up the learning curve. Meeting competitive standards other than productivity also depends on the effectiveness of work groups. For example, high quality is more than the sum of individual excellence. It requires successful interaction throughout the organization. Flexible and fast responses to customers also require effective teamwork. Flexible organizational formats and technologies increase the intensity and importance of group interactions at work. Whenever people work together, successful interaction depends on effective interpersonal skills, formal negotiation to resolve conflict, and successful teamwork. For example, they need interpersonal skills such as the ability to judge appropriateness of behavior, cope with undesirable behavior, absorb stress, deal with ambiguity, share responsibility, and interact comfortably with others. They need negotiation skills to overcome disagreement by compromising with, accommodating, and collaborating with others. Teamwork skills relate to the ability of groups to pool human talents to pursue common goals.

Influencing Skills: Organizational Effectiveness and Leadership Skills

Organizational effectiveness skills needed for work include the ability to work effectively in the context of explicit and implicit organizational cultures and subcultures. An organization is a maze of explicit and implicit power structures and cultures. Understanding how to operate within the organizational maze is key to peak performance in the new economy. Networks driven by common goals and information are supplanting both rigid hierarchies and fragmented structures. Workers will require strong organizational skills to participate effectively in the new networks. Also, because of increasing independence on the job, workers will need organizational skills to align their own efforts and goals with those of the organization and thereby minimize friction and wasted effort.

Leadership skills at work involve influencing others to serve the strategic purpose of an organization or the developmental needs of an individual.The pace of change and competitive standards in the new economy require workers to assume leadership roles beyond their own formal assignments. Moreover, the new economic environment requires fluidity in leadership roles; every person at every level of an organization may need to assume a leadership role at one time or another, depending on the requirements of the task at hand. In addition, the growing utilization of more flexible technologies and organizational networks is creating more fluid work processes that demand spontaneous leadership.

CONCLUSION

As we enter the last decade of the twentieth century, the nation is breaking a path toward the new economy. But numerous obstacles impede our progress and have become the focus of enormous social, economic, and scientific energy as pressure for growth continues to build.

Inside the workplace, flexible technology needs to be matched with more skilled and autonomous workers and work teams. New, more flexible work organizations that drive authority and resources toward the point of production, service delivery, and the customer are also required if we are to take advantage of the inherent potential of new human and machine combinations.

Barriers that impede progress toward the new economy are apparent outside the workplace as well. Environmental limitations to growth await a technical solution. The new economy is emerging in the midst of a financial dilemma--one that is fraught with savings-and -loan bailouts, junk bonds, and foreign debt. Also, although the new economy will require massive public and private investments in the nation's human, organizational, and technical infrastructure, at a time when the financial capital necessary for this overhaul is being absorbed in an orgy of public and private consumption. In addition, it is increasingly clear that our ability to stabilize domestic markets is no longer enough; the new economy has gone global, and global economic events tend to affect and impinge on our domestic economy. The unpredictability of global economic events requires new mechanisms for stability. Finally, the demographic surpluses of the 1970s are giving way to longer term demographic scarcity. The number of available workers is declining rapidly. Moreover, more employees will come from populations in which our human capital investments prior to work have been insufficient (Johnston and Packer, 1987).

We can be cautiously optimistic about the American prospect in the new economy. Much will depend on our ability to break through the barriers. Other nations face many of the same obstacles, but we move into the new economic era with the additional burden of our past successes. Old and once successful habits die hard. We set the standards in the old economy. The United States labors on toward the new economy, however, dragging the dead weight of our past industrial successes along behind.

APPENDIX III

THE SECRETARY OF COMMERCE
Washington, D.C. 20230

April 22, 1991

Honorable Tim Valentine
Chairman, Subcommittee on Technology
and Competitiveness
Committee on Science, Space,
and Technology
House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

The Malcolm Baldrige National Quality Improvement Act of 1987, Public Law 100-107, directs the Secretary of Commerce to prepare and submit to the President and Congress a report on the progress, findings, and conclusions from award program activities, along with recommendations for possible modifications of the Law.

The enclosed interim report summarizes award program activities through the first three years. In 1990, we saw a sharp increase in interest in the award, raising a number of issues which need further assessment. For this reason, recommendations are excluded from the report, allowing more time to develop consensus to help guide the Program. We will develop and then submit at a later date a brief final report which includes recommendations.

Sincerely,

Robert A. Mosbacher

Enclosure

INTERIM REPORT
TO THE PRESIDENT AND TO THE CONGRESS
ON THE
MALCOLM BALDRIGE
NATIONAL QUALITY AWARD

NIST

National Institute of Standards and Technology
Technology Administration
U. S. Department of Commerce

April 1991

A Note From the Secretary

With the third year of the Malcolm Baldrige National Quality Award proceedings now behind us, I am pleased to report that interest in the Award and in quality management is growing faster than any of us had imagined. The Award is quickly becoming the most coveted prize in U.S. industry and symbolizes a renewed resurgence in quality.

The Award also represents what has become a unique partnership between the public and private sectors. Not only does it prove the benefits of government and industry working together, but it is a shining example of business helping business. The winning companies' great enthusiasm for quality management and willingness to share their strategies are without precedent.

But that's what the Nation's quality effort is all about, helping each other set a new standard of excellence, bolstering our competitive edge in new international markets, and making the label "Made in America" the very symbol of quality once again.

As President Bush said at the 1990 Malcolm Baldrige National Quality Award ceremony, "The renewed spirit of excellence in business, of making quality an integral part of America's corporate strategy, has truly made us more competitive in the international arena. Exports have already increased nearly eight percent from year-ago levels and the figures keep rising."

If this past year is any indication of what is to come, I am sure that all involved in the Award program—the outstanding team at NIST, all nine of our Award winners, the examiners and judges, and others—can look forward to a very busy, but rewarding 1991.

Robert A. Mosbacher
Secretary of Commerce

Acknowledgments

The National Institute of Standards and Technology (NIST) wishes to thank the many hundreds of individuals and organizations who have contributed to the development and implementation of the Malcolm Baldrige National Quality Award. Special thanks are given to the Panel of Judges, Board of Examiners, and Board of Overseers who, together, have set the high standards now associated with the Award. Their volunteer efforts and dedication have been crucial to building the prestige and credibility of the Award, making it a national institution.

The Award-winning companies have played a key role in promoting awareness of quality and in raising our expectations of what U.S. organizations can achieve through vigorous pursuit of quality. These companies have helped tens of thousands of organizations—other companies, hospitals, schools, and government agencies. Their continued pursuit of ever-tougher quality levels serves both as an inspiration and a lesson.

NIST wishes to acknowledge the warm support and encouragement received from the family of Malcolm Baldrige, Secretary of Commerce (1981-1987).

During the past year, the Award program lost two of its strongest early supporters—the late Richard Freund, charter member of the Panel of Judges, and Lloyd Knowler, charter member of the Board of Examiners. Their personal excellence and commitment reflected the high standards the Award seeks to achieve.

The Award program owes much gratitude to the Foundation for the Malcolm Baldrige National Quality Award for its financial support and to the Consortium for the Malcolm Baldrige National Quality Award for serving as the Award's first contractor. Together with the boards, these organizations have worked to create what has become a unique public-private partnership.

Executive Summary

The Malcolm Baldrige National Quality Improvement Act of 1987 (Public Law 100-107), signed into law by President Reagan on August 20, 1987, created a national quality award for the United States. Congress cited several factors in establishing the Award, including:

- The leadership of the United States in product and process quality has been challenged strongly (and sometimes successfully) by foreign competition.
- Our Nation's productivity growth has improved less than our competitors over the past two decades.
- American business and industry are beginning to understand that poor quality costs companies as much as 20 percent of sales revenues nationally, and improved quality of goods and services goes hand in hand with improved productivity, lower costs, and increased profitability.

In just 3 years, the Malcolm Baldrige National Quality Award program has had a significant impact on American industry. Requests for Application Guidelines have grown at an astonishing rate:

1988	1989	1990
12,000	65,000	180,000

The guidelines have been improved each year and have become a de facto quality system standard for many U.S. companies.

The number of companies formally applying for the Malcolm Baldrige National Quality Award also has grown:

	1988	1989	1990
Manufacturing	45	23	45
Services	9	6	18
Small Business	12	11	34
Total	66	40	97

A number of states have initiated or are considering similar quality award programs based on the Award criteria and process. Numerous companies have instituted quality award programs to recognize outstanding business unit, division, or location quality programs.

Several of the winning companies, ineligible to compete nationally for 5 years, have instituted rigorous internal competitions based on the Award criteria and process. P.L. 100-107 requires that the winning companies share successful quality strategies and methods. All of the winners have exceeded expectations in their willingness to advance quality management in the United States. Executives from the first five winning companies have made over 1,000 presentations about their companies' quality strategies and methods. Since October 1989 there have been well over 350 articles in prestigious publications about the Award. These include: *The New York Times*, *Fortune*, *Time*, *The Washington Post*, and others. Over 3,000 presentations highlighting the Award were made in 1990. This is likely to double in 1991.

The examination work of the Award program is largely done by the Board of Examiners—a group of volunteers, that includes quality directors and experts from America's leading industries. Applications to serve on this board also have grown dramatically:

1988	1989	1990
140	242	600

In 1990, there were about six applicants for each new position on the board.

The support of America's professional, business, and trade associations also has been commendable. Board members have linkages to approximately 150 organizations. Over 75 organizations, representing a sizeable segment of the U.S. gross national product, have assisted with publicity.

The Award program has become an outstanding example of the possibilities and power of well-guided joint efforts of the public and private sectors. The Foundation has received contributions from 130 organizations. In all, $10.4 million has been pledged. The first three presidents of the foundation have been outstanding U.S. business leaders: Sanford N. McDonnell, chairman of the McDonnell Douglas Corporation; John J. Hudiburg, chairman of the Florida Power & Light company; and John Young, CEO, Hewlett Packard Company.

Several issues have been raised during the first 3 years, including whether the Award categories and number of Awards in a category should be expanded. While there are advantages, the Board of Overseers and the Panel of Judges recommend against expanding the categories. They are reviewing whether to remove the limit on the number of Awards that can be given.

Another issue revolves around finding ways to disseminate applicants' information about quality practices while ensuring that sensitive information is not released. The Board of Overseers and Panel of Judges are discussing the issue.

Whether the fees and effort to apply for the Award has deterred participation has been yet another issue. Overall, it appears that those who express concern over cost and effort view the Award primarily as a contest rather than as a national initiative to improve quality.

Two more recent issues involve the need to expand information transfer activities and the interest in reviewing advertising activities and issues with the Board of Overseers. Several winners have endorsed the concept of a private-sector generated "code of ethics" to provide advertising guidance for award winners.

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The Malcolm Baldrige National Quality Improvement Act of 1987: Background and Purposes

The Malcolm Baldrige National Quality Improvement Act of 1987 (Public Law 100-107), signed into law by President Reagan on August 20, 1987, created a national quality award for the United States. Among the congressional findings that led to the law were:

- ☐ The leadership of the United States in product and process quality has been challenged strongly (and sometimes successfully) by foreign competition, and our Nation's productivity growth has improved less than our competitors over the past two decades.
- ☐ American business and industry are beginning to understand that poor quality costs companies as much as 20 percent of sales revenues nationally, and that improved quality of goods and services goes hand-in-hand with improved productivity, lower costs, and increased profitability.
- ☐ The concept of quality improvement is directly applicable to small companies as well as large, to service industries as well as manufacturing, and to the public sector as well as private enterprise.
- ☐ Several major industrial nations have successfully coupled rigorous private sector quality audits with national awards giving special recognition to those enterprises the audits identify as the very best.
- ☐ A national quality award program of this kind in the United States would help improve quality and productivity by:
  - stimulating American companies to improve quality and productivity for the pride of recognition while obtaining a competitive edge through increased profits;
  - recognizing the achievements of those companies which improve the quality of their goods and services and provide an example to others;
  - establishing guidelines and criteria that can be used by business, industrial, governmental, and other organizations in evaluating their own quality improvement efforts; and
  - providing specific guidance for other American organizations that wish to learn how to manage for high quality by making available detailed information on how winning organizations were able to change their cultures and achieve eminence.

The award was named the Malcolm Baldrige National Quality Award. Separate award categories were created for small businesses, manufacturers, and service companies, with the stipulation that not more than two Awards be made within any category in any year. The act established criteria for qualification which include rigorous evaluations of the way in which the organization's business and other operations have contributed to the improvement of the quality of goods and services.

Responsibility for the Award was assigned to the Department of Commerce. The National Institute of Standards and Technology (NIST), formerly the National Bureau of Standards, was given responsibility for the creation and management of the Award program.

Award Program Design

During the summer of 1987, NIST began its design of the Award program, focusing on the specific requirements and basic intent of P.L. 100-107. The central purposes of the law were taken to be threefold:

- ☐ to promote quality awareness;
- ☐ to recognize quality achievements of U.S. companies; and
- ☐ to foster information transfer on successful quality strategies and on the benefits to be derived from quality management and practices to U.S. organizations.

Design Requirements

The design requirements derived from the specific requirements and the intent of P.L. 100-107 were:

- ☐ to create a quality value system that projects high and clear standards;
- ☐ to create a basis for diagnosis and information transfer;
- ☐ to operate the program as a public-private partnership with NIST serving in the role of manager and catalyst, fostering involvement and support by diverse organizations;
- ☐ to create an information transfer strategy that makes maximum use of private sector, state, local, and Federal organization channels; and
- ☐ to focus on the characteristics that would give the new award high credibility and prestige. These elements include:
  - high standards that are clear and objective;
  - participation by preeminent U.S. quality experts. Those invited to serve as judges, examiners, and overseers should be selected primarily on the basis of merit;
  - entry into the Award competition by leading U.S. quality companies;
  - freedom from all types of conflict of interest in all operations of the Award program;
  - careful safeguard of information contained in applications;
  - evaluation processes and requirements that are thorough and highly resistant to bias and influence; and
  - an annual quality review process to ensure that all award processes and requirements are improved to reflect learning from the previous years.

As part of its design efforts, NIST reviewed and evaluated other awards and their requirements and processes to assess their possible adaptation to the requirements of P.L. 100-107. Most notable among these awards is the Deming Prize, Japan's well-respected award for quality, established in 1951. NIST concluded that although many of the quality values embodied in other awards or proposed awards should be included in the Award, an entirely new design was needed to meet the overall requirements and purposes of the law. This conclusion was reinforced in discussions with scores of quality and business leaders around the United States.

Design Features

Based upon its interpretation of P.L. 100-107 and upon the requirements derived from the law, NIST designed the Award program to include the following features:

Award Administration

NIST contracted the Malcolm Baldrige National Quality Award Consortium, Inc., to provide assistance in administration of the Award. The consortium has assisted with the application review process, preparation of award documents, publicity, the award ceremony, the annual Quest for Excellence Conference, and information transfer activities.

Award Examination

The design of the Award examination represents an attempt to create, simultaneously, a basis for diagnosis and feedback and a tool for instruction, communication, and information transfer. The heart of the design is a framework that includes all basic elements critical to defining, implementing, and sustaining a world-class quality organization. This framework consists of seven elements:

- ☐ leadership—the senior management's success in creating quality values and in building the values into the way the company operates;
- ☐ information and analysis—the effectiveness of the company's collection and analysis of information for quality improvement and planning;
- ☐ strategic quality planning—the effectiveness of the company's integration of the customer's quality requirements into its business plans;
- ☐ human resources utilization—the success of the company's efforts to realize the full potential of the work force for quality;
- ☐ quality assurance of products and services—the effectiveness of the company's systems for assuring quality control of all its operations and in integrating quality control with continuous quality improvement;

- ☐ quality results—the company's improvements in quality and demonstration of quality excellence based upon quantitative measures; and
- ☐ customer satisfaction—the effectiveness of the company's systems to determine customer requirements and demonstrated success in meeting them.

The framework and the examination constructed upon it are intended to project the meaning of total quality management, in terms of action, for all organizations—manufacturing, service, government, health care, and schools. Thus, the Award examination creates **a quality excellence standard** suitable for use by millions of organizations throughout the United States.

Scoring System

A scoring system was designed to reflect the key dimensions of quality management: approach (tools and techniques); implementation of approaches throughout the organization; and results—quality improvement and customer satisfaction. The scoring system, together with the examination, creates a new basis for diagnosis and information transfer. Because the scoring system is intended to provide diagnostic capability over a wide range, a score of 500 on the 1,000-point scale of the scoring system was set as the benchmark in scoring. A score of 500 represents an organization that has put into place a quality system capable of moving it toward world-class quality if its improvement effort as described is sustained.

Funding

P.L. 100-107 authorizes the Secretary of Commerce to seek and accept gifts to support the Award program. Former Secretary of Commerce William C. Verity asked Mr. John J. Hudiburg, chairman of the Florida Power & Light Company, and Mr. Sanford N. McDonnell, chairman of the McDonnell Douglas Corporation, to form a foundation and to raise the funds needed to support the Award. Under the leadership of Mr. Hudiburg and Mr. McDonnell, the Foundation for the Malcolm Baldrige National Quality Award was created. The foundation has received contributions from 130 organizations. In all, $10.4 million has been pledged. To date, presidents of the foundation have been: 1988—Sanford N. McDonnell; 1989—John J. Hudiburg; and 1990—John Young, CEO, Hewlett Packard Company.

Fees

Foundation funding was projected to cover costs of Awards, the Award ceremony, preparation of examiners and costs of printing Award literature. Fees to applicants are assessed to cover the costs associated with review—mailing, handling, and the payment of honoraria to examiners who are not supported by their employers.

Evaluation Process

An evaluation process was designed to ensure a thorough, fair review, including a balance of quantitative and qualitative scoring, and careful attention to potential conflicts of interest. The process consists of four review stages—initial screening, consensus development, site visits, and Award recommendations. Multiple judgments are brought to bear at each stage of review.

Board of Examiners

P.L. 100-107 requires that NIST "shall rely upon an intensive evaluation by a competent board of examiners. . . ." No further specifications for this board are given in the law. The Board of Examiners structure and processes designed by NIST are as follows:

- ❒ Board Structure

  The board is structured on three levels—examiners, senior examiners, and judges. These levels correspond to examination responsibilities. Examiners conduct independent reviews and participate in consensus reviews and site visits as assigned. Senior examiners conduct independent reviews, lead consensus reviews, and lead site visits as assigned. Judges monitor all evaluation processes, select applicants for further review after the first two stages of review, and recommend Award recipients. The charter for the Panel of Judges requires a nine-member team. The number of examiners and senior examiners is set to reflect the anticipated application load.

- ❒ Examiner Selection

  Selection to serve on the Board of Examiners is made through a competitive process. Candidates must submit applications to serve on the board, outlining their work experiences, education, and professional affiliations. Examiners are selected on the basis of their personal qualifications and are not considered representatives of their employers or any other organization. Overall board composition is balanced to reflect the likely award applicants and to create organizational linkages to enhance information transfer. Members of the board are required to reapply each year. Approximately one-third of the board members turns over each year to ensure broad participation and openness to all sectors.

- ❒ Examiner Preparation

  All members of the board are required to take part in a preparation course each year. The purpose of the preparation courses is to familiarize examiners with criteria, processes, and evaluation requirements. A major focus of the course is on consistency of scoring and adherence to procedures that ensure fairness and avoid conflict of interest.

Feedback System

The structure of the Award examination and the dimensions of the scoring system serve as the basis for feedback. All award applicants receive a feedback report that includes general information on the evaluation process, a distribution of the scores of all applicants (without the names of the applicants), and a summary of the applicant's strengths and areas for improvement in each of the seven examination categories.

Annual Improvement Process

The design of the Award program includes an annual improvement process. In this process, NIST solicits feedback from examiners, overseers, applicants, and others as appropriate. Comments are solicited from individuals broadly representative of the communities involved in the Award program. At the conclusion of the year, NIST synthesizes an improvement model for the following year. The model is reviewed and improved with assistance of program participants. Plans are reviewed with the Board of Overseers, the advisory body to the Department of Commerce, and the chair of the Panel of Judges.

Information Transfer Strategy

The information transfer strategy of the Award program seeks to build a network of companies, organizations, and individuals to share information. This process was initiated by NIST in September 1987. Organizations and individuals were contacted to inform them of the new Award, to solicit comments, and to seek their support and involvement. More than 100 business leaders were contacted. About 75 trade, business, and professional organizations, representing a sizeable fraction of the U.S. gross national product, were solicited to assist with publicity. These organizations are representative of manufacturing, services, and small businesses. The four major elements of the information transfer strategy are:

- ☐ Activities of Award Recipients
  Award recipients are excellent role models. It was anticipated that the base of recipients would grow by three to six per year, which, over a several year period, would produce models of varying sizes and types of businesses. Activities were expected to include conferences, workshops, and news coverage and advertising in national media and trade press.

- ☐ Best Practice Embodied in Award Criteria
  The Award criteria identify and communicate best practice. Moreover, the annual improvement process for the criteria builds on the lessons learned from the previous year. This element of the information transfer strategy depends upon making the criteria a generic quality management excellence standard, suitable for use by diverse organizations.

- ☐ Creation of Organizational Linkages
  A wide variety of organizations throughout the United States—trade and professional organizations, business associations, state networks, and accrediting bodies, for example—must play a major role in quality improvement if the national initiative is to succeed. NIST proposes to use its extensive networks within the private sector for quality information transfer and to expand these networks to include organizations that together reach virtually all businesses.
- ☐ Activities of Award Program Participants
  Award program participants—NIST, the Board of Examiners, the Board of Overseers, and the consortium—are a growing base of individuals who speak and write on the Award processes and findings. NIST provides information to support the outreach of the Award participants, thus creating a large and growing corps of individuals to represent the values, processes, and findings from the Award program.

The basic program plan was approved by former Secretary of Commerce Verity on October 29, 1987. A more detailed plan was presented to an ad hoc private sector review team on December 11, 1987.

1988 Award Program

For the 1988 Award process, the Application Guidelines were issued on February 12, 1988. The application deadline was set for May 20, 1988. To carry out the review, 100 quality experts were chosen from among 140 applicants to serve on the first Board of Examiners. Of these, 9 were appointed judges, and 21 and 70 were appointed senior examiners and examiners, respectively. Members of the first Panel of Judges appointed by NIST were:

William W. Eggleston, chairman	IBM Corporation (retired)
James K. Bakken	Ford Motor Company
Richard A. Freund	Quality Planning Services
A. Blanton Godfrey	Juran Institute, Inc.
William A. Golomski	W.A. Golomski & Assoc.
Brian Joiner	Joiner Associates, Inc.
David B. Luther	Corning Glass Works
Frank J. Pipp	Xerox Corporation
W. Kent Sterett	Florida Power & Light Co.

Each member of the examination team took part in one of seven evaluation preparation classes, consisting of about 3 days of training, practice, prework, and homework. Applications for the first Award numbered 66: 45 in the manufacturing category, 9 in the service category, and 12 in the small business category. Overall scoring, examination team comments and judges selections resulted in 13 site visits: 10 in the manufacturing category, 2 in the service category, and 1 in the small business category. Based upon the judges' recommendations, former Secretary of Commerce Verity selected three Award winners for 1988. These were: Motorola, Inc., and the Commercial Nuclear Fuel Division of Westinghouse Electric Corporation in the manufacturing category, and Globe Metallurgical, Inc., in the small business category.

Awards were presented by President Reagan and Secretary of Commerce Verity at a White House Ceremony on November 14, 1988. Award winners, members of the Board of Examiners and Board of Overseers, and private sector contributors were honored at an Award luncheon, hosted by Secretary Verity. On November 14, 1988, NIST made a report to the Trustees of the Foundation for the Malcolm Baldrige National Quality Award. The first meeting of the Board of Overseers was held November 14-15, 1988. NIST summarized the design and execution of the Award program and outlined plans for 1989. Members of the first Board of Overseers appointed by Secretary Verity were:

Thomas J. Murrin, chairman	Carnegie Mellon University
Armand V. Feigenbaum	General Systems Company, Inc.
Meredith M. Fernstrom	American Express Company
Douglas A. Fraser	Former President, United Auto Workers
Bradley T. Gale	PIMS/Strategic Planning Institute
David A. Garvin	Harvard Business School
Joseph M. Juran	Emeritus, Juran Institute, Inc.
Lionel H. Olmer	Former Under Secretary of Commerce for International Trade
Elmer B. Staats	Former Comptroller General of the United States

The 1988 Award year was capped by the first Quest for Excellence Conference which provided an opportunity for the 1988 winners to present their detailed strategies for success. The conference was sponsored by the consortium and held April 5-6, 1989.

1989 Award Program

At the conclusion of the 1988 Award cycle, an improvement process was undertaken. A 1-day improvement workshop was held on December 16, 1988.

The 1989 Application Guidelines were available on January 10, 1989. For the 1989 Award cycle, 134 members were appointed to the Board of Examiners. These were selected from among 243 applicants. There were 9 judges, 27 senior examiners and 98 examiners. Seventy-two had been members of the 1988 board. Members of the 1989 Panel of Judges were:

William W. Eggleston, chairman	IBM Corporation (retired)
James K. Bakken	Ford Motor Company (retired)
Donald M. Berwick	Harvard Community Health Plan
A. Blanton Godfrey	Juran Institute, Inc.
Brian Joiner	Joiner Associates, Inc.
David B. Luther	Corning, Inc.
Frank J. Pipp	Xerox Corporation
W. Kent Sterett	Union Pacific
Raymond Wachniak	Firestone Tire & Rubber Company

All members of the Board of Examiners participated in one of six, 3-day preparation courses.

Award applications were due May 5, 1989. Forty applications were received: 23 in the manufacturing category, 6 in the service category, and 11 in the small business category. The 1989 examination process incorporated a two-stage review of the written application. Sixteen indicators were scored in Stage I. The Panel of Judges selected 23 applicants for further review and consensus scoring. After this stage, judges selected 10 applicants for site visits: 8 in manufacturing and 2 in the service category. Based upon the final recommendations of the Panel of Judges, Secretary of Commerce Robert A. Mosbacher selected two winners, both in the manufacturing category: Milliken & Company and Xerox Business Products and Systems.

Awards were presented by President Bush and Secretary Mosbacher on November 2, 1989, at a ceremony in the Malcolm Baldrige Great Hall at the Department of Commerce. The Department of Commerce hosted a recognition ceremony for the Award recipients and participants in the 1989 Award process. NIST reported on progress and plans at a meeting of the Trustees of the Foundation for the Malcolm Baldrige National Quality Award.

The Board of Overseers met November 14-15, 1989, to review reports and plans from NIST, the chairman of the Panel of Judges, and the consortium. Members of the Board of Overseers for 1989 were:

Robert W. Galvin, chairman	Motorola, Inc.
Armand V. Feigenbaum	General Systems Company, Inc.
Meredith M. Fernstrom	American Express Company
Bradley T. Gale	PIMS/Strategic Planning Institute
David A. Garvin	Harvard Business School
William A. Golomski	W.A. Golomski & Associates
Joseph M. Juran	Emeritus, Juran Institute, Inc.

The 1989 Award year was concluded with the second Quest for Excellence Conference where the 1989 Award winners described their successful strategies. This conference was co-sponsored by NIST and the consortium and held February 21-23, 1990.

1990 Award Program

At the conclusion of the 1989 Award cycle, an improvement process was again undertaken. A 1-day improvement meeting was held on November 30, 1989.

The 1990 Application Guidelines were published on January 15, 1990. For the 1990 Award cycle, 177 members were appointed to the Board of Examiners. These were selected from among 600 applicants. There were 9 judges, 40 senior examiners, and 128 examiners. The 1990 Panel of Judges was the same as that of 1989. All Board of Examiners members attended one of seven 3-day preparation courses.

Award applications were due April 25, 1990. The 1990 application process for the first time required that before a written application could be filed, a certification of eligibility be obtained. Ninety-seven applications were received: 45 in the manufacturing category, 18 in the service category, and 34 in the small business category. Based upon final recommendations of the Panel of Judges, Secretary Mosbacher selected four winners: Cadillac Motor Car Division (Detroit, Mich.) and IBM Rochester (Rochester, Minn.) in the manufacturing category; Federal Express Corp. (Memphis, Tenn.) in the service category; and Wallace Co., Inc. (Houston, Texas), in the small business category.

Awards were presented by President Bush and Secretary Mosbacher on December 13, 1990, at a ceremony in the Malcolm Baldrige Great Hall at the Department of Commerce.

The 1990 Board of Overseers was the same as that of 1989. The Board of Overseers and the Panel of Judges held a joint meeting on February 28, 1990, to review the Award program and to outline several projects to strengthen it.

Progress in Information Transfer

Information transfer is occurring through many channels in addition to those of the Award-winning companies and distribution of feedback reports. Major examples include:

- Distribution of Application Guidelines that represents a major channel for conveying lessons learned, reaching not only Award applicants but tens of thousands of organizations, including many not currently eligible for Awards. Guidelines distributed during the first 3 years were:

1988	1989	1990
12,000	65,000	180,000

- Outreach activities of NIST that are directed toward professional and trade associations, state and local organizations, business schools, and Federal agencies. NIST has shared information and assisted a number of state networks including one or more in Alabama, Arkansas, Arizona, California, Colorado, Connecticut, Florida, Illinois, Indiana, Michigan, Minnesota, Montana, Mississippi, North Carolina, North Dakota, New Jersey, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Washington, West Virginia, and Wisconsin. Included in NIST's outreach activities are transfer of assessment training courses for use throughout the United States. Extensive efforts are made to transfer information through national, business, and trade news media outlets.
- Activities of several hundred private-sector organizations including the American Society for Quality Control and the American Productivity and Quality Center. This includes numerous conferences and publications.
- The "Quest for Excellence" conference series which features the Award winners.
- Activities of Award board members. The members have linkages to approximately 150 professional and trade organizations in addition to their employing organizations. Their activities include numerous presentations and publications.

Overall, an estimated 3,000 presentations highlighting the Award were made in 1990. This number is expected to double in 1991.

Benefits of the Award Program

The major benefits of the Award program include:

- ❒ Creation of a quality excellence standard projects the meaning of total quality management and acts to elevate quality standards throughout the United States. This quality excellence standard, embodied in the Award criteria, is widely used for:
    - training and education
    - self assessment
    - planning
    - basis for other awards
    - customer-supplier interactions
    - business school education
    - quality system definition, and
    - harmonization of quality requirements.

- ❒ Based upon their widespread and growing use, it is reasonable to conclude that the Award's values will continue to spread to new communities and be adopted as bases for quality improvement.
- ❒ Promoting quality information sharing and quality strategy, the Award has enhanced sharing across non-traditional lines by providing generic management excellence guidelines.
- ❒ Encouraging diverse organizations to take part in the national quality effort by demonstrating that quality is a major factor in competitiveness, and that quality improvement requires the support of all organizations seeking to improve their own competitive positions or those of their clients.
- ❒ Projecting the United States as a global quality leader, focusing on quality to enhance its position in international trade. Though Japan's Deming Prize has existed for 40 years, it appears that the Award criteria and processes already enjoy much wider acceptance and use throughout the world than Deming Prize criteria.
- ❒ Training of 250 Board of Examiners members in quality assessment methodology. In addition, training based on the Award assessment training has reached an estimated several thousand people. This training extends beyond traditional quality professionals and includes many disciplines such as customer service, human resources, engineering, marketing, management, and finance.

❒ Many organizations which provide consulting services, surveys, training, or executive searches have added Award related services to their offerings.

❒ Increase in media interest in quality. The number of media queries received by NIST continues to grow. Major articles have appeared in the trade and business press about the Award. Since October 1989, well over 350 articles and broadcasts in both domestic and overseas markets have mentioned the Award. Many articles feature the quality strategies of the Award winners.

❒ Increase in awareness—Opinion Research Corporation Survey. In January and February of 1990, Opinion Research Corporation conducted a survey of top executives and consumers to determine the extent to which they were aware of the Award. Among the highlights of the survey findings was 11 percent of the general population had heard of the Award. Nearly 40 percent of the executives said they were familiar with the qualifications to win the Award. Eighty-seven percent of executives said that it would increase their desire to do business with a company if that firm had won an award for quality, such as the Malcolm Baldrige National Quality Award. Other findings indicate a higher than expected awareness. The awareness level has grown steadily since the completion of the survey in February 1990.

❒ Increasing understanding of the economic benefits of quality improvements. Demonstration by the Award winners that quality improvement is accompanied by productivity improvement, cash savings, market share gains, and supplier improvement, indicate that the net effect of widespread quality improvement throughout the U.S. economy could result in a significant increase in the rate of growth of the gross national product.

Implications of the Award: Strengthening U.S. Competitiveness

The Award was established to help strengthen U.S. competitiveness through improvement in industry quality management and practices. There is widespread acceptance of productivity enhancement as a key factor in strengthening competitiveness and of infrastructure support—public and private—as a key requirement. The growing recognition of the close connection between quality improvement on one hand and improved productivity, market share, and responsiveness on the other, suggests new mechanisms to investigate the "quality factor" in competitiveness. It also suggests mechanisms to improve competitiveness through improved support services. By offering a rational definition of quality in terms of key components which can be analyzed and communicated in a consistent manner, the Award helps to create a basis for developing of an action agenda. Summarized below are eight areas where public-private cooperation could strengthen U.S. competitiveness.

- **Projecting U.S. Quality Leadership Worldwide**
  Quality has emerged as a major issue in international trade. Japan and Pacific Rim countries—widely recognized as quality leaders—continue to intensify their quality improvement efforts. The European Community is placing great emphasis upon International Standards Organization quality standards. In addition, the European Foundation for Quality Management—a new organization founded by many of Europe's leading corporations—plans to introduce a European quality award in 1991. This foundation is studying the Award model in detail. Since its introduction in February 1988, about 25 nations have requested information on the Award system. Some U.S. companies with international operations use Award assessment methods to harmonize corporate quality systems. Overall, Award quality criteria and assessment systems receive wide recognition throughout the world. This offers a basis to help improve the perception of U.S. goods and services throughout the world. Strategies need to be developed to fully exploit the U.S. quality initiative in support of U.S. trade development.

- **Strengthening and Harmonizing Standards and Accreditation Systems**
  Though the Award "standard" is at present too rigorous to be a standard for general commerce or for direct use in accreditation systems, many of the key concepts could be extended to upgrade standards and accreditation requirements. In addition, many of the concepts could serve as a "stretch" standard harmonizing requirements for organizations seeking greater

consistency in processes to achieve the highest levels of quality. The multiplicity of such systems that now exist in the United States may be quite costly, with the largest burdens placed upon smaller businesses which must maintain a variety of records and be subjected to numerous audits. Efforts are needed to help harmonize requirements and thereby reduce excess costs associated with duplicative or inconsistent evaluation systems.

❒ Using Award Criteria To Improve Government Procurement

The Award criteria are useful in projecting clear quality requirements and creating a basis for assessment of quality systems against those requirements. As such, they offer a basis to improve procurement practice by introducing a variety of quality factors. Moving in this direction over time is desirable.

Several concerns arise with respect to the potential use of the Award criteria in Government procurement:

- As generic management criteria, the Award criteria focus on systems and practices, not on specific products and services. For example, early progress in establishing systems may not be reflected in product or service improvements. Factors such as life-cycle performance and costs are not addressed explicitly and would need to be included for many key products.
- Evaluation against the criteria requires considerable expertise and experience. Such expertise and experience are rare. Reliable assessment requires experience and training. Assessment should include multiple evaluations and use of consensus processes.
- A particular score in an assessment does not necessarily imply the same weaknesses or gaps. Thus, a given score could be achieved in many ways. The procurement body would need to weigh the importance of any specific deficiencies.

Though the Award criteria offer a promising basis for strengthening procurement practices, procedures and knowledge need to be developed to ensure their appropriate and reliable use.

❒ Improving the Basis for Assessing the Economic Effects and Benefits of Quality

The benefits of quality improvement—productivity enhancement, waste reduction, market share gain, product and process improvement, responsiveness, improvement in employee morale, for example—offer a powerful rationale for all organizations to initiate quality efforts, particularly because such efforts require long-term commitment and patience and may not yield short-term financial results. Studies in Japan have shown that

Deming Prize winners are significantly more profitable than other Japanese companies. Though evidence is increasingly convincing, the connection between specific quality practices and economic benefits needs to be placed upon a firmer foundation than now exists. A study is under way by the U.S. General Accounting Office to investigate this connection. The study will use data from some Award winners and many site-visited companies (those that have volunteered).

In addition to the benefits accruing to organizations which practice total quality management, there are many public benefits as well. These include: improved national competitiveness and standard of living, and transfer of quality practices from businesses to public institutions. The improved recognition of the quality factor in productivity enhancement in government, health care, and schools opens up many new areas for economic analysis.

❒ **Supporting State, Local, and Regional Economic Development**
Many states, regions, and areas have suffered serious erosion of their economic base resulting in the closing or downsizing of companies. In recent years, state and local governments, universities, and private groups have developed cooperative efforts to stimulate economic development. Strategies include technical and economic aid, tax incentives to attract new businesses, and the creation of partnerships.

Some states and areas are now including quality in their economic development plans. Quality councils involving businesses, business associations, governments, hospitals, and schools have begun to form to support and develop quality initiatives. These councils recognize that factors such as quality of management, quality of the work force, and governmental, educational, and medical services are important in attracting new businesses and in stabilizing and expanding existing businesses.

The Award criteria are well suited to support state and local quality council initiatives because they enable communication among diverse organizations. State and local quality activities could use the Award materials to:

- give council leaders a general overview of total quality management, quality trends, and the national campaign;
- provide cooperative training for managers in businesses, government, hospitals, and schools;
- conduct workshops in quality and quality assessment;
- include quality information in assistance programs;
- encourage leading local companies to apply for the Award and to share their experience with other organizations; and

- give awards at state and local levels to promote quality, and develop training courses for award assessors.

Supporting Public Education

Quality has become a key factor in business success in domestic and international markets. Many experts conclude that quality differences—real and perceived—are among the leading contributors to the U.S. trade deficit. Though views differ on the nature of the quality factor (partly because of disagreements over the meaning of quality), most analysts agree that quality-related market success stems from two major areas: production cost advantages and customer loyalty to brands they know to be, or perceive to be, of higher quality.

Leading U.S. companies, particularly those facing strong global competition and studying the successes of the competition, are moving aggressively toward systematic quality improvement efforts. The movement is slow because significant quality gains require major reorientation of operations, improved integration, and retraining of all employees, including managers.

Despite the growing importance of quality to business success, quality and quality management are receiving relatively little attention in schools in either curricula or as an area for research. The Award criteria are well suited as an adjunct to curriculum development because they provide an overview of total quality management. Potential uses of the criteria in schools include:

- a guide for revising curricula and course materials such as textbooks;
- a framework for the development of case studies and for coherent analysis of quality as an element in business success; and
- a device for defining total quality management in relation to other business management requirements.

Supporting Trade and Business Associations

A main concern of trade and business associations is the vitality of their industries and the companies they represent. Quality has become a major issue in many industries and businesses, particularly those experiencing strong competition from abroad or seeking to expand exports. Many firms are eliminating suppliers that cannot meet their increasingly demanding quality requirements.

Trade and business associations exert great influence on the course of business in the United States and provide many useful services to member companies. These associations could help improve the competitiveness of their members in many ways, including:

- giving association leaders a general overview of total quality management, quality trends, and the national campaign;
- promoting quality awareness by making copies of the Award materials available to member companies and encouraging them to apply for an Award and to share their experience;
- providing new services such as training in quality management and in quality assessment;
- including presentations and sessions on quality management in conferences and workshops;
- using the criteria framework to compare foreign and domestic firms that have achieved success through quality improvement; and
- developing and disseminating excellence indicators and benchmarks to focus on key areas where performance should be measured and improved.

☐ Supporting Professional Societies

Professional societies provide a wide variety of services to support members' professional development. As quality becomes a more important factor in the management of their employers' organizations, professionals must understand how quality management relates to their disciplines. Education and training programs for specialists should include some instruction in quality management principles. This would help them understand the changes occurring in the work environment and the changing role of specialists. The Award criteria provide a convenient framework for describing quality management and the integration of professional disciplines. It also can serve as a framework for teaching problem-solving skills in professional disciplines and provide a guide for organizing workshops and symposia on quality.

Key Issues

Expansion of Award Categories

Requests to expand Award categories to include other sectors have been received, though most such requests have been informal. Categories recommended include health care, government, education, and not-for-profit organizations. A potential benefit of involving education and health care organizations would be influence upon accreditation standards that generally do not adequately address continuous improvement or customer requirements. Successful inclusion of new categories would require networks of quality experts in these areas and resources to support Award management, training, publications, and an enlarged Award ceremony. The Board of Overseers and the Panel of Judges have addressed category expansion and recommend against it at this time. They have counseled that such expansion be properly prepared to ensure the high standards established for the business categories are maintained.

Number of Awards in a Category

In specifying that up to two Awards may be given in a category, the Award combines a competitive system (only the top 2 contenders could win) with a qualification system (the top contenders may win only if they meet the Award's high standards). Japan's Deming Prize is a qualification system and hence does not limit the number of Prize winners. Some individuals have suggested that the Award remove the limit on the number of Awards per category to help encourage cooperation and sharing. Others argue that the competitive aspect encourages quality comparisons that tend to drive further improvement, and that the Award has encouraged more cooperation. The Board of Overseers and the Panel of Judges have considered the relationship between number of Awards and overall benefits. There is active discussion among the Panel of Judges and Board of Overseers as to whether or not there should be a limit on the number of Awards given.

Sensitivity of Information

Prior to creating the Award processes and examiner requirements, many potential Award applicants were concerned with the possibility of inappropriate use of information provided in applications. Indeed, it appeared that the Award's approach to handling information would be a major factor in the Award's credibility and acceptance. To insure that information is effectively disseminated on the best practices and variations in approaches from Award applicants, the Panel of Judges and the Board of Overseers are considering a pilot project. If initiated, the pilot project team would interview applicants, examiners, senior examiners, and judges, and review applicant files (applications, examiner reports, consensus reports, feedback reports, and, where applicable, site visit reports). All applicants would be asked for permission to include their materials in the review process, and, if they agree, to name a liaison manager for the duration of the project.

Conflict of Interest

Concerns have been raised about individuals serving on the Board of Examiners and also providing assistance to businesses interested in applying for the Award. Because examiners are highly skilled professionals in the use and evaluation of quality management techniques, they are in constant demand for speaking engagements, as information resources, and as consultants. In fact, the only way many companies can gain from examiners' experiences is through one of the activities mentioned above. Although these activities help to promote quality awareness and to foster information transfer on successful quality strategies, they also could lead to situations where a conflict of interest results. Clearly, the greatest potential for such a conflict would occur if an examiner were to serve as a consultant to a business which is interested in applying for the Award.

This situation was foreseen in the design of the Award program and steps were taken to avoid it. Specifically, all examiners must sign agreements to abide by a Code of Ethics. The Code of Ethics requires examiners to disclose all business affiliations (e.g., where they have served as an employee or contractor). Based on this information, assignments are made to preclude conflicts. These steps ensure that any examiner who has been affiliated with an applicant will not be involved in the review, scoring, or evaluation of that applicant or one of its competitors. Nondisclosure of information from applications also is a part of the examiners' Code of Ethics. Finally, examiners receive no information regarding the content or status of applications to which they are not assigned; to merely request such information would represent a serious violation of the Code of Ethics. To ensure that all examiners are sensitive to this issue, their 1991 training sessions have devoted extra attention to conflict of interest concerns. Despite the safeguards, this issue needs continued attention by program managers and the Board of Overseers to ensure that we continue doing everything possible to protect the integrity of this process.

Fees and Effort To Apply for the Award

The Award competition requires applicants to pay application and site visit fees. In addition, applicants must respond to 33 examination criteria within a limit of

75 pages for companies in the manufacturing and service categories and within 50 pages for companies in the small business category. (This compares with the approximately 1,000-page application required for Japan's Deming Prize.) The fees and effort to apply for the Award are of concern, and in some cases, may have deterred participation.

The participation fees have been set to recover the incremental costs of application review. Such costs are substantially below market rates because actual examiner compensation and review costs are small fractions of their market equivalents. Board of Examiner participation is largely a volunteer effort. Applicants do need to expend considerable effort in preparing an application. Though estimates of this effort vary enormously (by a factor of 100 or more), even the smallest estimates represent costs that exceed the application fees.

The design of the Award process recognizes that ultimate success in improving American quality would depend upon the perceived **value** of participation greatly exceeding the costs. Moreover, this value would need to be perceived whether or not an applicant receives an Award, because only a small fraction of applicants could win even if they compete every year. Participation costs were set at the minimum consistent with the achievement of the full value. The focus on value led to an examination designed to serve as an assessment device that could supplement or replace self assessment systems companies were already using. Because self-assessment is an integral part of world-class quality systems, the assessment carried out in preparing an application could (and perhaps should) be considered a business requirement and not be attributed to the cost of applying for the Award. The fact that thousands of companies which have not yet applied and other organizations (many not even eligible) are using the Award system for self assessment, supports the view that such assessment is a business requirement and that the Award system is a useful assessment instrument.

Clearly, the maximum benefit and value of participation come from combining self assessment and feedback. Companies which have taken this course report that they have achieved the highest levels of understanding ever of their companies' operations, and, as a result, have a greatly improved basis for planning. Overall, it appears that those who express concern over cost and effort view the Award primarily as a contest rather than as a national initiative to improve quality. In addition, any other basis for giving Awards, such as customer nomination, would eliminate the principal benefits to the applicants and to the Nation.

Expansion of Information Transfer Activities

The increasing quality requirements in international trade put enormous demands on companies to improve quality rapidly. In addition, many large companies are narrowing their supplier bases, eliminating supplying companies which cannot keep pace. As a result of these trends, many companies, small businesses in particular, will face serious challenges to upgrade quality. Success of the national effort requires that quality-related information be disseminated widely and efficiently throughout the Nation. In addition, high standards must be promulgated and maintained. Because of the vast scope of this effort, success requires using and creating as many channels of support as possible. State and local government and other programs in technology transfer, economic development, training, and business assistance offer a significant reservoir of resources that might be marshalled to support quality. NIST, as part of its mission to foster information transfer, is establishing linkages with state and local extension programs, educational institutions, and professional/trade associations. The focus of this effort is on the Award quality criteria and assessment systems, how they have benefitted businesses participating in the program, and how the lessons learned through the program can be effectively communicated to those businesses which are serious about improving quality but are not yet ready to compete for the Award.

Advertising

P.L. 100-107 specifically permits advertising and publicity by winners. Congress recognized the potential for increasing corporate and public awareness of quality matters and strategies through such publicity. The use of advertising by winners has increased each year, and awareness of the Award has increased dramatically.

NIST has encouraged winners to ensure that advertising furthers the purposes of the Award, accurately identifies the unit of a larger corporation when a subsidiary is given the Award, and does not imply that the Award is given for a product or service. Some concerns have been raised about advertising as it has been used more extensively in the third year. NIST has discussed these issues with past winners and will review advertising activities and issues with the Board of Overseers, which has expressed an interest in these matters. Several winners have endorsed the concept of a private-sector generated "code of ethics" to provide advertising guidance for Award winners based on experience to date.

Findings and Conclusions

Progress Toward Building a Private-sector/Government Partnership

Fundamental to the success of the Award in improving quality in the United States is building an active partnership between business and government. Support by the private sector in the form of funds, volunteer efforts, and participation in information transfer is strong and growing very rapidly. In addition to the $10.4 million raised by the Foundation for the Malcolm Baldrige National Quality Award, perhaps 1,000 organizations have already contributed or offered funds, volunteers, or assistance. Board of Examiners members each contribute 10 to 15 days or more per year. Applications to serve on this board have numbered 140 in 1988; 243 in 1989; and 600 in 1990. In 1989 and 1990, more than 90 percent of board members applied to serve again. In addition to their examination responsibilities, board members participate in information transfer activities within their professional, trade, community, and state organizations, and represent a large and growing corps of experts promoting the national quality effort.

Beginning with the passage of P.L. 100-107, the Administration has provided strong support for the Award. Awards in 1988 were presented by President Reagan and in 1989 and 1990 President Bush presented the Awards. Ceremonies at the White House and the Department of Commerce have included recognition of the Award recipients and of public service performed by members of the Board of Overseers and Board of Examiners.

President Bush stressed the importance of quality improvement in major speeches, including the 1990 State of the Union Address, and has shown personal interest in the Award. Secretary of Commerce Mosbacher and former Deputy Secretary of Commerce Thomas J. Murrin are strong proponents of the Award. They have made scores of speeches emphasizing quality and highlighting the Award. In addition, Commerce Under Secretary for Technology Robert M. White has provided continuing support and encouragement of the Award program, working to promote quality as an important factor in strengthening the U.S. technology base.

Currently, the Administration is promoting quality management principles throughout the Federal government. The President's Award for Quality and Productivity—open to competition by Federal agencies—is patterned after the Award. NIST has been involved in numerous information transfer and cooperative activities with many Federal organizations including the Consumer Product Safety

Commission, Environmental Protection Agency, Federal Quality Institute, General Accounting Office, General Services Administration, Internal Revenue Service, Office of Management and Budget, and the Departments of Commerce, Defense, Education, Health and Human Services, and Labor. Approximately 20,000 copies of the Award guidelines have been distributed to Federal organizations.

Participation in the Award Competition

In the first 3 years of the Award competition, applicants have numbered 66 in 1988; 40 in 1989; and 97 in 1990. (This compares with fewer than 10 applicants per year for Japan's Deming Prize.) By Award category, the number of applicants for the 3 years are:

	1988	1989	1990
Manufacturing	45	23	45
Services	9	6	18
Small Business	12	11	34

Greater participation by manufacturing companies in the early years of the Award program is attributed to a number of factors including their greater involvement in international trade and to stronger support and publicity by manufacturing trade and business organizations as well as the Department of Commerce. However, manufacturing participation for the 3 years accounts for 68 percent in 1988; 58 percent in 1989; and 46 percent in 1990 of overall participation. The decrease in applicants in all three categories in 1989 is attributed to the rigor of the Award's standards which became better understood after the achievements of the first year's winners were publicized. The significant increase in all three Award categories in 1990, coupled with the thousands of companies of all types preparing to compete during the next 5 years, indicate that applications are likely to continue to rise and that all sectors will participate.

Performance of the Applicants

In addition to the excellence demonstrated by the first five Award winners, all companies which were site-visited are making outstanding progress in total quality management. An additional 25 to 30 applicants scored very well which indicates that with sustained efforts they could be strong contenders. Among the deficiencies noted in lower scoring applicants include a lack of understanding of quality competitive comparisons, lack of process measurements, and weakness in creating a prevention basis for quality. Other observations on the performance of applicants include:

☐ No service companies received Awards in 1988 or 1989, though, there were several strong contenders among the 15 service applicants. The deficiencies noted above were particularly prevalent among service applicants. Many service companies have undertaken new quality initiatives during the past 2 years and many others have upgraded existing efforts. The 18 applicants in the service category in 1990—more than in 1988 and 1989 combined—reflects the increase in awareness and pursuit of quality in the service sector.

☐ One small business received an Award (Globe Metallurgical, Inc., 1988) among the 23 applicants in 1988 and 1989. The 34 applicants in the small business category in 1990 reflect an increase in awareness of quality in this sector. In 1990, the second Award in the small business category was given to Wallace Co., Inc. A service company, Wallace was selected from among 34 applicants. Some small businesses report that they cannot easily spare the personnel to complete the Award application. (Globe's application was completed in about 3 days.) The Award program continues to encourage small businesses and others to combine application with self assessment, thus enhancing the value of participation.

Feedback to Applicants

Applicants during the first 2 years generally are very positive regarding the value of their feedback reports. Coupled with internal assessments conducted as part of the application process, the feedback reports are used in strategic quality planning. The major concern of applicants was with the timeliness of the feedback reports. Reports were sent to applicants earlier in 1989 than in 1988.

Award Winners as Role Models

The Award winners have contributed enormously to the national quality effort helping to elevate quality standards in the United States and to encourage other companies to raise their quality standards. Information transfer activities, sharing, promotion, publicity and advertising have occurred at levels far beyond those anticipated at the outset of the program. As a result, the Award and the winners have been featured in national media such as *The Wall Street Journal, Fortune* magazine, *USA Today, The New York Times, The Washington Post,* and television networks. Presentations by Award winners to date exceed 1,000 and requests for assistance continue to increase rapidly. One of the most noteworthy trends is the increasing attention to quality by senior executives of other companies as a result of their access to senior executives of the winning companies. In addition to a wide range of information activities, the Award winners have undertaken a variety of initiatives involving business schools, suppliers, government agencies, and state organizations. The Award winners are excellent models for many reasons. For example, they have demonstrated they can improve productivity, gain market shares, and increase savings; they use quality as a strategic competitive weapon; they aggressively pursue quality; and they have led the way in designing key quality concepts such as Motorola's Six Sigma and Xerox Business & Product Systems' Benchmarking approaches.

APPENDIX A

PUBLIC LAW 100-107

One Hundredth Congress of the United States of America

AT THE FIRST SESSION

Begun and held at the City of Washington on Tuesday, the sixth day of January,
one thousand nine hundred and eighty-seven

An Act

To amend the Stevenson-Wydler Technology Innovation Act of 1980 to establish the Malcolm Baldrige National Quality Award, with the objective of encouraging American business and other organizations to practice effective quality control in the provision of their goods and services.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Malcolm Baldrige National Quality Improvement Act of 1987".

SEC. 2. FINDINGS AND PURPOSES.

(a) FINDINGS.—The Congress finds and declares that—

(1) the leadership of the United States in product and process quality has been challenged strongly (and sometimes successfully) by foreign competition, and our Nation's productivity growth has improved less than our competitors over the last two decades;

(2) American business and industry are beginning to understand that poor quality costs companies as much as 20 percent of sales revenues nationally, and that improved quality of goods and services goes hand in hand with improved productivity, lower costs, and increased profitability;

(3) strategic planning for quality and quality improvement programs, through a commitment to excellence in manufacturing and services, are becoming more and more essential to the well-being of our Nation's economy and our ability to compete effectively in the global marketplace;

(4) improved management understanding of the factory floor, worker involvement in quality, and greater emphasis on statistical process control can lead to dramatic improvements in the cost and quality of manufactured products;

(5) the concept of quality improvement is directly applicable to small companies as well as large, to service industries as well as manufacturing, and to the public sector as well as private enterprise;

(6) in order to be successful, quality improvement programs must be management-led and customer-oriented and this may require fundamental changes in the way companies and agencies do business;

(7) several major industrial nations have successfully coupled rigorous private sector quality audits with national awards giving special recognition to those enterprises the audits identify as the very best; and

(8) a national quality award program of this kind in the United States would help improve quality and productivity by—

(A) helping to stimulate American companies to improve quality and productivity for the pride of recognition while obtaining a competitive edge through increased profits,

(B) recognizing the achievements of those companies which improve the quality of their goods and services and providing an example to others,

(C) establishing guidelines and criteria that can be used by business, industrial, governmental, and other organizations in evaluating their own quality improvement efforts, and

(D) providing specific guidance for other American organizations that wish to learn how to manage for high quality by making available detailed information on how winning organizations were able to change their cultures and achieve eminence.

(b) PURPOSE.—It is the purpose of this Act to provide for the establishment and conduct of a national quality improvement program under which (1) awards are given to selected companies and other organizations in the United States that practice effective quality management and as a result make significant improvements in the quality of their goods and services, and (2) information is disseminated about the successful strategies and programs.

SEC. 3. ESTABLISHMENT OF THE MALCOLM BALDRIGE NATIONAL QUALITY AWARD PROGRAM.

(a) IN GENERAL.—The Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701 et seq.) is amended by redesignating sections 16, 17, and 18 as sections 17, 18, and 19, respectively, and by inserting after section 15 the following new section:

"SEC. 16. MALCOLM BALDRIGE NATIONAL QUALITY AWARD.

"(a) ESTABLISHMENT.—There is hereby established the Malcolm Baldrige National Quality Award, which shall be evidenced by a medal bearing the inscriptions 'Malcolm Baldrige National Quality Award' and 'The Quest for Excellence'. The medal shall be of such design and materials and bear such additional inscriptions as the Secretary may prescribe.

"(b) MAKING AND PRESENTATION OF AWARD.—(1) The President (on the basis of recommendations received from the Secretary), or the Secretary, shall periodically make the award to companies and other organizations which in the judgment of the President or the Secretary have substantially benefited the economic or social well-being of the United States through improvements in the quality of their goods or services resulting from the effective practice of quality management, and which as a consequence are deserving of special recognition.

"(2) The presentation of the award shall be made by the President or the Secretary with such ceremonies as the President or the Secretary may deem proper.

"(3) An organization to which an award is made under this section, and which agrees to help other American organizations improve their quality management, may publicize its receipt of such award and use the award in its advertising, but it shall be ineligible to receive another such award in the same category for a period of 5 years.

"(c) CATEGORIES IN WHICH AWARD MAY BE GIVEN.—(1) Subject to paragraph (2), separate awards shall be made to qualifying organizations in each of the following categories—

"(A) Small businesses.

"(B) Companies or their subsidiaries.

"(C) Companies which primarily provide services.

"(2) The Secretary may at any time expand, subdivide, or otherwise modify the list of categories within which awards may be made as initially in effect under paragraph (1), and may establish separate awards for other organizations including units of government, upon a determination that the objectives of this section would be better served thereby; except that any such expansion, subdivision, modification, or establishment shall not be effective unless and until the Secretary has submitted a detailed description thereof to the Congress and a period of 30 days has elapsed since that submission.

"(3) Not more than two awards may be made within any subcategory in any year (and no award shall be made within any category or subcategory if there are no qualifying enterprises in that category or subcategory).

"(d) CRITERIA FOR QUALIFICATION.—(1) An organization may qualify for an award under this section only if it—

"(A) applies to the Director of the National Bureau of Standards in writing, for the award,

"(B) permits a rigorous evaluation of the way in which its business and other operations have contributed to improvements in the quality of goods and services, and

"(C) meets such requirements and specifications as the Secretary, after receiving recommendations from the Board of Overseers established under paragraph (2)(B) and the Director of the National Bureau of Standards, determines to be appropriate to achieve the objectives of this section.

In applying the provisions of subparagraph (C) with respect to any organization, the Director of the National Bureau of Standards shall rely upon an intensive evaluation by a competent board of examiners which shall review the evidence submitted by the organization and, through a site visit, verify the accuracy of the quality improvements claimed. The examination should encompass all aspects of the organization's current practice of quality management, as well as the organization's provision for quality management in its future goals. The award shall be given only to organizations which have made outstanding improvements in the quality of their goods or services (or both) and which demonstrate effective quality management through the training and involvement of all levels of personnel in quality improvement.

"(2)(A) The Director of the National Bureau of Standards shall, under appropriate contractual arrangements, carry out the Director's responsibilities under subparagraphs (A) and (B) of paragraph (1) through one or more broad-based nonprofit entities which are leaders in the field of quality management and which have a history of service to society.

"(B) The Secretary shall appoint a board of overseers for the award, consisting of at least five persons selected for their preeminence in the field of quality management. This board shall meet annually to review the work of the contractor or contractors and make such suggestions for the improvement of the award process as they deem necessary. The board shall report the results of the award activities to the Director of the National Bureau of Standards each year, along with its recommendations for improvement of the process.

"(e) Information and Technology Transfer Program.—The Director of the National Bureau of Standards shall ensure that all program participants receive the complete results of their audits as well as detailed explanations of all suggestions for improvements. The Director shall also provide information about the awards and the successful quality improvement strategies and programs of the award-winning participants to all participants and other appropriate groups.

"(f) Funding.—The Secretary is authorized to seek and accept gifts from public and private sources to carry out the program under this section. If additional sums are needed to cover the full cost of the program, the Secretary shall impose fees upon the organizations applying for the award in amounts sufficient to provide such additional sums.

"(g) Report.—The Secretary shall prepare and submit to the President and the Congress, within 3 years after the date of the enactment of this section, a report on the progress, findings, and conclusions of activities conducted pursuant to this section along with recommendations for possible modifications thereof.".

(b) Conforming Amendment.—Section 9(d) of such Act (15 U.S.C. 3708(d)) is amended by striking "or 16" and inserting in lieu thereof "16, or 17".

Jim Wright

Speaker of the House of Representatives.

Geo Bush

Vice President of the United States and
President of the Senate.

APPROVED
AUG 20 1987

Ronald Reagan

APPENDIX B

BIOGRAPHICAL SKETCH OF MALCOLM BALDRIGE

Malcolm Baldrige
1922-1987

Malcolm Baldrige

26th Secretary of Commerce

Malcolm Baldrige was nominated to be Secretary of Commerce by President Ronald Reagan on December 11, 1980, and confirmed by the United States Senate on January 22, 1981.

During his tenure, Baldrige played a major role in developing and carrying out Administration trade policy. He took the lead in resolving difficulties in technology transfers with China and India. Baldrige held the first Cabinet-level talks with the Soviet Union in seven years which paved the way for increased access for U.S. firms to the Soviet market. He was highly regarded by the world's most pre-eminent leaders.

Leading the Administration's effort to pass the Export Trading Company Act of 1982, Baldrige was named by the President to chair a Cabinet-level Trade Strike Force to search out unfair trading practices and recommend ways to end those practices. He was the leader in the reform of the nation's antitrust laws.

Baldrige's award-winning managerial excellence contributed to long-term improvement in economy, efficiency, and effectiveness in government. Within the Commerce Department, Baldrige reduced the budget by more than 30% and administrative personnel by 25%.

Prior to entering the Cabinet, Baldrige was chairman and chief executive officer of Scovill, Inc., Waterbury, Connecticut. Having joined Scovill in 1962, he is credited with leading its transformation from a financially troubled brass mill to a highly diversified manufacturer of consumer, housing, and industrial goods.

Baldrige began his career in the manufacturing industry in 1947 as a foundry hand in an iron company in Connecticut and rose to the presidency of that company by 1960. During World War II, Baldrige served in combat in the Pacific as Captain in the 27th Infantry Division. He was born in Omaha, Nebraska and graduated from Yale University with a bachelor's degree in 1944.

Baldrige worked during his boyhood as a ranch hand and earned several awards as a professional team roper on the rodeo circuit. He was a Professional Rodeo Man of the Year in 1980 and was installed in the National Cowboy Hall of Fame in Oklahoma City in 1984.

Malcolm Baldrige died July 25, 1987 in a rodeo accident in California. His service as Secretary of Commerce was one of the longest in history. He is said to have been possibly the most colorful Secretary of Commerce and one of the most beloved. He is survived by his wife Margaret and his two children.

APPENDIX C

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Warren D. Evans	Intel Corporation
Kenneth J. Farrell	Xerox Corporation
John V. Fechter	Bull HN Information Systems Inc.
Rocco L. Fiaschetti	Self-employed
Janet Fiero	Improving Engineering Effectiveness, Inc.
W.(Bill) J. Fightmaster	Square D Company
Victor F. Figurelli	Shell Oil Company
Donald C. Fisher	Dobbs International Services
Joseph B. Froelich	Campbell Soup Company

Louise K. Goeser	Westinghouse Electric Corporation
Roderick D. Gray	BOSE Corporation
Robert G. Grimmett	Textron Defense Systems
Thomas J. Grimshaw	Snap-on Tools Corporation
Holbert L. Hale	MEMC Electronic Materials, Inc.
Robert W. Hall	Indiana University School of Business
John Hamburg	USAF
Newt G. Hardie	Milliken & Company
Stan G. Harger	Emerson Electric Company
Christopher Hart	Harvard University
M. Zia Hassan	Illinois Institute of Technology
Brian G. Hawthornthwaite	KEMET Electronics
Maureen S. Heaphy	Transformation Network, Inc.
Marshall T. Herron	Tennessee Eastman Company
Richard C. Hoff	Omni Tech International, Limited
Aleta Holub	The First National Bank of Chicago
Bradley P. Horner	Parker Pen U.S.A. Limited
Ernest C. Huge	Ernst & Young
Walter L. Hurd, Jr.	Harrington, Hurd & Rieker
Spencer Hutchens, Jr.	Intertek Services Corporation
Kenneth L. Jones	Westinghouse Electric Corporation
Louis N. Jones	Quality Technics
Edward E. Kaminski	Ortho Pharmaceutical Corporation
Victor E. Kane	Ford Motor Company
Harry W. Kenworthy	Rogers Corporation
Kenneth L. King	3M Company
Robert E. King	GOAL/QPC
Jean M. Kinney	Procter & Gamble
Peter J. Kolesar	Columbia University
Konstanty (Stan) E. Krylow	AG Communication Systems
Nicholas C. Leifeld	Serigraph Inc.
Gerry G. Lenk	Self-employed
Charles F. Lieb	Westinghouse Electric Corporation
B. Sanford Liebesman	Bell Communication Research
William R. Loeffler	The Loeffler Group Inc.
Ross C. Loeser	E.I. du Pont de Nemours & Co., Inc.
Mary M. LoSardo	Metropolitan Life Insurance Co.
Robert L. Loughhead	Weirton Steel Corp. (retired)
Gerald E. Lutz	Lockheed Aeronautical Systems Co.
David E. Mahlke	David Mahlke Associates
Stanley A. Marash	Stat-A-Matrix Institute
Martin R. Mariner	Corning, Incorporated
Daniel V. Marohl	Allen-Bradley Co.
Ingeborg A. Marquardt	Bell & Howell Company
Richard A. Marra	Gryphon Bank Consultants
John Martin	Babson College
William B. McBee	Armstrong World Industries, Inc.
David J. McClaskey	Tennessee Eastman Company
Robert G. McGrath	Quality Quest Inc.
Lawrence P. Moon	Kondex Corporation

Debra A. Owens	Baxter Healthcare Inc.
Virginia L. Patrick	Northwestern National Life Insurance Co.
John H. Petrolini	Teradyne Inc.
Richard J. Pierce	Self-employed
Robert F. Polimine	O-Z/Gedney
Bernadette C. Porto-Kozak	MetPath Inc.
James Provenzano	Otis Elevator Company
P. David Puckett	Perkin-Elmer
A. Arthur Rankis	Millipore Corporation
Martin Rayl	Motorola Inc.
Jack B. ReVelle	Hughes Aircraft Company
William E. Ruxton	National Tooling & Machining Assoc.
Phillip M. Scanlan	AT&T
Robert C. Schaller	Martin Marietta Corporation
Dennis R. Schnabel	Mentor Graphics Corporation
John J. Schwarzenbach	Printronix
Michael J. Scotto	Gilbarco, Inc.
Bruce H. Simpson	American Supplier Institute
Mark E. Smith	AT&T
Max H.C. Smith	Siecor Corporation
Richard L. Smith	General Electric
Marian M. Steeples	U. S. WEST Communications
Richard B. Stump	National Computer Systems, Inc.
John G. Surak	Clemson University
Victoria L. Taylor	Citizens & Southern Trust Company
Patrick L. Townsend	Townsend & Gebhardt
Charles P. Truby	Becton Dickenson and Co.
Josh B. Tye	Sverdrup Technology, Inc.
Brian L. Usilaner	U.S. General Accounting Office
Harrison M. Wadsworth	Georgia Institute of Technology
Robert F. Wagnon	Pepsi-Cola General Bottlers, Inc.
Kent R. Weber	J.T. Baker Inc.
John E. West	Tenneco Inc.
B. Joseph White	University of Michigan
Hilary M. Wilson	Mead Containerboard
Rosalie R. Wilson	Federal Quality Institute

APPENDIX F

ORGANIZATIONAL AFFILIATIONS OF MEMBERS OF THE BOARD OF EXAMINERS

ORGANIZATIONAL AFFILIATIONS OF MEMBERS OF THE BOARD OF EXAMINERS

Academy of Management
Advertising Research Foundation
Aerospace Industrial Assn. of America
Am. Academy of Actuaries
Am. Academy of Medical Directors
Am. Academy of Pediatrics
Am. Assn. for the Advancement of Science
Am. Assn. of Bioanalysis
Am. Assn. of Female Executives
Am. Assn. of Professional Consultants
Am. Assn. of University Professors
Am. Bar Association
Am. Chemical Society
Am. College of Healthcare Executives
Am. College of Physicians
Am. Defense Preparedness Association
Am. Fed. for Clinical Research
Am. Foundrymen's Society
Am. Gear Manufacturers Association
Am. Hospital Association
Am. Inst. for Aeronautics & Astronautics
Am. Inst. of Certified Public Accountants
Am. Inst. of Chemical Engineers
Am. Inst. of Chemists
Am. Inst. of Industrial Engineers
Am. Inst. of Metallurgical Engineers
Am. Iron & Steel Society
Am. Management Association
Am. Marketing Association
Am. Medical Association
Am. National Standards Institute
Am. Nuclear Society
Am. Powdered Metal Institute
Am. Production & Inventory Control Society
Am. Productivity Management Association
Am. Public Health Association
Am. Quality & Productivity Institute
Am. Soc. Engineering Education
Am. Soc. for Microbiology
Am. Soc. for Quality Control
Am. Soc. for Training & Development
Am. Soc. of Mechanical Engineers
Am. Soc. of Metals
Am. Soc. of Pension Actuaries
Am. Soc. of Naval Engineers
Am. Soc. of Safety Engineers
Am. Statistical Association
Appalachian Quality Council
Assn. for Advancement of Medical Instrumentation
Assn. for Computing Machinery
Assn. for Consumer Research
Assn. of Field Service Managers
Assn. of Internal Management Consultants
Assn. for Manufacturing Excellence
Assn. for Quality & Participation
Assn. of Health Services Research
ASTM
Automotive Industry Action Group
Biometrics Society
Chinese Quality Control Society
Conference Board Quality Council
Data Processing Management Association
Decision Sciences Institute
Deming Users Group
EDP Auditors Association
Electronics Industry Association
Engineering Society of Detroit
European Marketing Association
European Organization for Quality Control
European Organization for Quality
Florida Engineering Society
GE Manangement Association
IEEE Reliability Society
Inst. for Internal Auditors
Inst. of Electronic & Electrical Engineers
Inst. of Food Technologists
Inst. of Industrial Engineers
Inst. of International Auditors
Inst. of Management Sciences
Insurance Accounting & Systems Association
Int'l Academy for Quality
Int'l Assn. of Customer Service
Int'l Management Association
Int'l Metallographic Society
Japan Management Association
Life Office Management Association
Machine Vision Assn. of SME
Machinery & Allied Products Institute
Marketing & Communication Executives
Marketing Sciences Institute

Mathematics Assn. of America
Metallurgical Society
Nat'l Assn. of Bank Cost & Management Accounting
Nat'l Assn. of Pharmaceutical Manufacturers
Nat'l Assn. of Purchasing Management
Nat'l Center for Health Services Research
Nat'l Conf. of Standards Laboratories
Nat'l Management Association
Nat'l Organization of Development Network
Nat'l Purchasing Managers Association
Nat'l Security Industrial Association
Nat'l Soc. for Performance & Instruction
Nat'l Soc. of Professional Engineers
Nat'l Space Society
Navy League
Nondestructive Testing Society
N.Y. State Restauraunt Association
N.Y. State School Board Association
Ohio Bar Association
Ohio Quality & Productivity Forum
Oklahoma Soc. of Professional Engineers
Operations Management Association
Office Systems Research Association
Precision Measurements Association
Quality Management Association
Scientific Research Soc. of North America
Soc. of Manufacturing Engineers
Seattle Area Quality Information Network
Soc. for Industrial & Applied Mathematics
Soc. of Automotive Engineers
Soc. of Consumer Affairs Professionals
Soc. of Manufacturing Engineers
Soc. of Petroleum Engineers
Soc. of Plastics Engineers
Soc. of Reliability Engineers
Soc. of Soft Drink Technologists
Soc. of Women Engineers
Software Assn. of Oregon
System Safety Society
Tailhook Association
Technical Assn. of Paper & Pulp Industry
The Institute of Management Sciences
Toastmasters International
U.S. Metric Association
Underwriters Laboratories
Wellesley Career Associates

APPENDIX G

REPRESENTATIVE ORGANIZATIONS WHICH HAVE SUPPORTED THE AWARD PROGRAM

REPRESENTATIVE ORGANIZATIONS CONTACTED BY NIST QUALITY AWARD OFFICE

Aerospace Industries Association of America
Air Transport Association
Am. Assembly of Collegiate Schools of Business
Am. Assn. for the Advancement of Science
Am. Assn. of Community & Jr. Colleges
Am. Assn. of Engineering Societies
Am. Assn. of Industrial Management
Am. Bankers Association
Am. Chemical Society
Am. Council of Life Insurance
Am. Electronics Association
Am. Executives for Manufacturing Excellence
Am. Hospital Association
Am. Hotel & Motel Association
Am. Iron & Steel Institute
Am. Management Association
Am. Marketing Association
Am. Production & Inventory Control Society
Am. Productivity Management Association
Am. Retail Federation
Am. Soc. for Quality Control
Am. Soc. for Training & Development
Am. Soc. of Mechanical Engineers
Am. Statistical Association
ASM International
Assn. for Manufacturing Excellence, Inc.
Assn. of Independent Colleges & Schools
ASTM
Automotive Industry Action Group
Business Roundtable
Computer & Business Equipment Manufacturing Association
Council for Optical Radiation Measurements
Council on Post Secondary Accreditation
Defense Manufacturing Board
Design & Construction Quality Institute
Direct Marketing Association
Electronic Industries Association
Grocery Manufacturers Association
Health Industry Manufacturers Association
Inst. of Electrical & Electronics Engineers
Inst. of Industrial Engineers
Inst. of Management Sciences
Inst. of Packaging Professionals
Instrument Soc. of America
Int'l Customer Services Association
Joint Commission on Accreditation of Health Care Organizations

Leadership America
Madison Area Quality Improvement Network
Manufacturers Alliance for Productivity & Innovation
Marketing Science Institute
Minority Business Development Agency
Nat'l Assn. of Manufacturers
Nat'l Conf. of Standards Laboratories
Nat'l Council for Accreditation of Teacher Education
Nat'l Demo. Proj. on Quality Insurance in Health Care
Nat'l Electrical Manufacturers Association
Nat'l Fed. of Independent Business
Nat'l Machine Association
Nat'l Restaurant Association
Nat'l Security Industrial Association
Nat'l Small Business United
Nat'l Soc. of Professional Engineers
Operations Management Association
Philadelphia Area Council for Excellence
Philadelphia Presidents' Organization
Professional Services Council
Quality Assurance Institute
Scientific Apparatus Makers Association
Seattle Area Quality Improvement Network
Soc. of Automotive Engineers
Soc. of Consumer Affairs Professionals in Business
Soc. of Logistics Engineers
Soc. of Manufacturing Engineers
Sporting Goods Manufacturing Association
Technical Marketing Soc. of America
The Conference Board
U.S. Chamber of Commerce
United Engineers & Contractors
Work in America Institute, Inc.
Young Presidents' Organization

APPENDIX H

WINNERS' BRIEFS (1988-1990)

Malcolm Baldrige National Quality Award

1988 AWARD WINNER

GLOBE METALLURGICAL INC.

In a tailspin like most other firms in the nation's "smokestack industries," Globe Metallurgical Inc. refused to retreat from the rising tide of imported cheap, commodity-grade metals. While many U.S. makers of ferroalloys (iron-based metals) were closing plants, the Ohio-based company stated its refusal in the most convincing of terms. It initiated a quality-improvement program that has made its products the standards of excellence in the metals industry.

Globe set out in 1985 to become the lowest-cost, highest-quality producer of ferroalloys and silicon metal in the United States. At the same time, the firm shifted its focus from commodity markets, such as steel manufacturing, to the higher value-added markets represented by the foundry and chemical industries and certain segments of the aluminum industry.

Three years later, Globe occupies a quality niche above the competition. Not coincidentally, its share of the U.S. market for high-quality foundry alloys has risen dramatically, sales in Canada and Europe have increased significantly, and profitability has returned.

In quality audits by General Motors, Ford, Intermet, John Deere, and other customers, the firm's scores have set records, resulting in certified supplier status for Globe. Foreign buyers also recognize Globe's commitment to quality. When many European traders place an order for magnesium ferrosilicon alloy they specify that the material must be "Globe quality," a standard that other suppliers must match.

COMPANY HISTORY

A privately held company since 1987, when Moore McCormick Resources sold all of its metal-related businesses, Globe employs 210 people at plants in Beverly, Ohio, and Selma, Alabama. The plants produce about 100,000 tons of alloys annually for more than 300 customers. Annual sales totalled less than $100 million in 1987, but are projected to increase by approximately 30 percent in 1988.

The firm's drive for quality began two years before the leveraged buy out of Globe's current management. In 1985, Globe's managerial staff was trained in statistical process control and, by the year's end, the foundation of a company-wide quality-improvement system — termed Quality, Efficiency, and Cost (QEC) — was laid.

ELEMENTS OF QEC

Globe's QEC program permeates the entire company, and goals for quality improvement are integrated into strategic planning and research and development activities. Quality committees exist at every level within the company, and rapid communication scales the distance between top officials, who make up Globe's QEC steering committee, and workers, who participate in "quality circles" that meet weekly. In between in each plant is the QEC committee, composed of the plant manager and department heads, that assembles each morning to review the previous day's performance.

The QEC committee assesses the causes of out of control conditions, reviews corrective measures, evaluates suggestions made by quality circles, and addresses broader quality issues that might be raised by the steering committee.

Now three years into its QEC program, Globe has found no surfeit of good ideas for improving product quality and reducing cost, many of them originating with workers. Improvement measures are carefully tracked, and the results — successes and failures — are published monthly.

In fact, Globe attempts to monitor and quantify every factor that influences product quality, making extensive use of computer-controlled systems that continually advise workers on whether target values for important processing variables are being met. Key variables are identified through a number of means, including failure mode effects analyses, statistical evaluations that identify production steps that are most prone to failure. Color control charts derived from a system developed in-house document each product's processing history. The charts provide workers, who are trained in statistical process control, with a performance appraisal and customers with important information for their manufacturing processes.

Significant improvements in achieving the targeted grade of metal have been realized since the implementation of the computer-controlled systems, with corresponding reductions in the amount of scrap or reclassified product produced. Today, only about 3 percent of the heats — including initial batches of new products — require reclassification. Similarly, greater consistency in final products, achieving specifications that fall within ranges more demanding than those imposed by customers, has significantly lowered the chance of an out-of-specification shipment. The improved consistency of the operation has increased the production rates on the furnaces, while significantly reducing energy consumption, a major cost item for Globe. At the same time Globe has realized improvements in manpower efficiency of over 50% in certain areas.

Customer complaints have decreased by 91 percent, from 44 in 1985, when 49,000 pounds of product were returned for replacement, to 4 in 1987, when no product was returned.

Among workers, who have flexible job assignments and whose quality-improvement efforts are recognized through personal letters from management and small gifts, Globe's QEC program is paying dividends. The accident rate, near the average for the ferroalloy industry in 1985, has fallen, while the industry average has risen. The Globe absenteeism rate has also decreased since 1985.

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Malcolm Baldrige National Quality Award

1988 AWARD WINNER

MOTOROLA INC.

Like an olympic athlete seeking to score better than determined world rivals, Motorola Inc. seeks sales victories in world markets for electronic components and equipment by improving the quality of its own performance. For Motorola, quality improvement leading to total customer satisfaction is the key.

In 1981, Motorola launched an ambitious drive for a tenfold improvement in the quality of its products and services. Motorola succeeded. Now, the company has evidence that many of its products are the best in their class. Looking ahead, Motorola intends to top its achievements — further gains in quality for 1989, yet another leap in 1991, and near perfection a year later. The company's quality goal is simply stated: "Zero defects in everything we do."

Motorola's managers literally carry with them the corporate objective of "total customer satisfaction." It's on a printed card in their pockets. Corporate officials and business managers wear pagers to make themselves available to customers, and they regularly visit customers' businesses to find out their likes and dislikes about Motorola products and services. The information, along with data gathered through an extensive network of customer surveys, complaint hotlines, field audits, and other customer feedback measures, guides planning for quality improvement and product development.

COMPANY AT A GLANCE

Employing 99,000 workers at 53 major facilities worldwide and based in Schaumburg, Illinois, 60-year old Motorola is an integrated company that produces an array of products, distributing most through direct sales and service operations. Communication systems — primarily two-way radios and pagers — account for 36 percent of annual sales, and semiconductors account for 32 percent. The remaining revenues come from sales of cellular telephones and equipment for defense and aerospace applications, data communications, information processing, and automotive and industrial uses. Sales in 1987 totalled $6.7 billion.

Responding to the rapid rise of Japanese firms in world markets for electronics, Motorola's management began an almost evangelical crusade for quality improvement; addressing it as a company issue and, through speeches and full-page ads in major publications, as a national issue.

The company's most persuasive messages, however, are the results of its quest for quality. Most products have increased their market share, here and abroad. In Japan, for example, Motorola pagers, supplied to Nippon Telegraph and Telephone, were introduced in 1982 and now claim a major share of that market. Over the past two years alone, Motorola has received nearly 50 quality awards and certified supplier citations, tops among the 600 electronics firms responding to a survey published in March 1987.

KEY QUALITY INITIATIVES

To accomplish its quality and total customer satisfaction goals, Motorola concentrates on several key operational initiatives. At the top of the list is "Six Sigma Quality," a statistical measure of variation from a desired result. In concrete terms, Six Sigma translates into a target of no more than 3.4 defects per million products, customer services included. At the manufacturing end, this requires designs that accommodate reasonable variation in component parts but production processes that yield consistently uniform final products. Motorola employees record the defects found in every function of the business, and statistical technologies are increasingly made a part of each and every employee's job.

Reducing the "total cycle time" — the time from when a Motorola customer places an order until it is delivered — is another vital part of the company's quality initiatives. In fact, in the case of new products, Motorola's cycle-time reduction is even more ambitious; the clock starts ticking the moment the product is conceived. This calls for an examination of the total system, including design, manufacturing, marketing, and administration.

Motorola management demonstrates its quality leadership in a variety of ways, including top-level meetings to review quality programs with results passed on through the organization. But all levels of the company are involved. Nonexecutive employees contribute directly through Motorola's Participative Management Program (PMP). Composed of employees who work in the same area or are assigned to achieve a specific aim, PMP teams meet often to assess progress toward meeting quality goals, identify new initiatives, and work on problems. To reward high-quality work, savings that stem from team recommendations are shared. PMP bonuses over the past four years have averaged about 3 percent of Motorola's payroll.

To ensure that employees have the skills necessary to achieve company objectives, Motorola has set up its own training center and spent in excess of $170 million on worker education between 1983 and 1987. About 40 percent of the worker training the company provided last year was devoted to quality matters, ranging from general principles of quality improvement to designing for manufacturability.

Motorola knows what levels of quality its products must achieve to top its competitors. Each of the firm's six major groups and sectors have "benchmarking" programs that analyze all aspects of a competitor's products to assess their manufacturability, reliability, manufacturing cost, and performance. Motorola has measured the products of some 125 companies against its own standards, verifying that many Motorola products rank as best in their class.

MOTOROLA INC.

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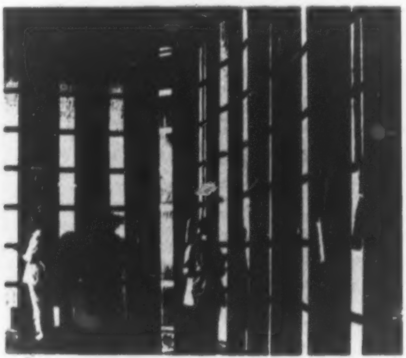
Malcolm Baldrige National Quality Award 1988 AWARD WINNER

COMMERCIAL NUCLEAR FUEL DIVISION WESTINGHOUSE ELECTRIC CORPORATION

When electric utilities operating nuclear power plants install fuel-rod assemblies made by the Westinghouse Commercial Nuclear Fuel Division (CNFD), they can be 99.995 percent certain that each of the thousands of rods supplied will perform flawlessly. Realizing that future business depends on continued excellence in product performance, CNFD is pushing its all-important dependability rating even higher.



Prior to the early 1980's, the CNFD quality goals were geared toward satisfying regulatory requirements for fuel-rod assembles. Then, motivated by stiff competition and demanding customer requirements, it raised its sights with the objective of being recognized as the world's highest-quality supplier of commercial nuclear fuel.

The Commercial Nuclear Fuel Division of Westinghouse is building a quality culture that asks employees to do "the right things right the first time." This philosophy makes every action by every employee a quality initiative. Customer satisfaction is the guiding principle, whether it is the ultimate customer or the next person in the process.

CNFD uses a "Total Quality" approach built upon four imperatives for continuous quality improvement: management leadership, product and process leadership, human resource excellence, and customer satisfaction. Progress is measured by a unique system called "Pulse Points." The system tracks improvements in over 60 key performance areas identified with statistical techniques and other evaluative tools, and it helps set measurable goals within each unit of CNFD, down to the jobs of hourly workers.

Product and service improvements attributable to the seven-year old program have paid business dividends. The value of new orders in 1987 was the highest in the decade.

CNFD AT A GLANCE

Begun in 1969 and now part of the Westinghouse Nuclear Fuel Business Unit, one of 26 such units in the company, CNFD currently employs nearly 2,000 people at three sites. The Specialty Metals Plant, near Pittsburgh, produces the zircalloy tubes that encase pellets of uranium dioxide fuel processed at CNFD's Columbia, South Carolina plant. Final fabrication of fuel-rod assemblies is also done at the Columbia Plant. Headquarters Operations and Nuclear Engineering activities are located in Monroeville, Pennsylvania.

The CNFD currently supplies about 40 percent of the U.S. market for fuel-rod assemblies and about 20 percent of the world market. Fuel assemblies supplied by the Columbia Plant accounted for nearly seven percent of U.S. electrical needs in 1987.

"TOTAL QUALITY"

CNFD uses state-of-the-art technology, such as robotics and other automated processing equipment, supercomputer simulations, expert systems and laser-diagnostics, and laser welding. It estimates that quality-related decisions have dictated 75 percent of its capital allocations during recent years. Management, however, attributes CNFD's substantial improvements in quality and efficiency not so much to advanced technology as it does to a "turned on" work force and to CNFD's Total Quality approach to operations.

Rather than having a chief quality officer, CNFD assigns responsibility for directing and coordinating quality improvements to the general manager and his various staff functions. These managers form the CNFD's Quality Council, which sets policies, plans and strategies, and directs the quality improvement process. Management's rationale is that quality concerns must be fully integrated into all design, production, and customer service activities.

In strategic planning, top management develops formal quality initiatives and Pulse Points that are deemed most critical to improving performance and customer satisfaction. Supporting, measurable goals, all aimed at accomplishing divisional objectives, are developed in each of the departments and then for each worker. Progress is monitored through an extensive data-collection and trend-analysis system. Pulse Point trends are reviewed each month in a teleconference that includes top management at each division site.

Workers directly address quality improvement opportunities and help devise initiatives through their participation in project-oriented teams. Nearly 1,400 employees were members of 175 such teams in 1987. About 90 percent of all workers have undergone quality awareness or quality-related training during the past three years.

CNFD maintains close — usually daily — contact with its utility customers and regularly collects technical data to evaluate the performance of its fuel assemblies. Customer service plans are created for each client and are jointly reviewed each quarter. A customer's Fuel Users Group meets twice a year to share information and discuss needs for new products. Consistently high scores in surveys and customer-conducted audits reflect high levels of satisfaction. A more telling indicator, however, is repeat business. Existing customers accounted for more than 90 percent of the orders placed in 1987.

Although its eye is on the bottom line, CNFD management deliberately did not include cost concerns in its quality improvement program, believing that gains in quality would spawn cost-reductions through increases in efficiency. Results achieved between 1984 and 1987 confirm this belief. For example, first time through yields in the manufacture of fuel rods increased from less than 50 percent to 87 percent, substantially reducing scrap, product reworking, and manufacturing cycle time. This helped CNFD achieve over three years of 100 percent on-time delivery of high-quality products.

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Malcolm Baldrige
National
Quality
Award

1989 AWARD WINNER

MILLIKEN & COMPANY

Ten years ago, Milliken, a major textile manufacturer long-recognized for quality products and its use of state-of-the-art technology, asked why some Japanese competitors achieved higher quality, less waste, greater productivity, and fewer customer complaints while using technology less advanced than Milliken's. The reasons, company executives found, lay in management approaches and in personnel practices that, along with technology, drive improvements in quality and efficiency.

In 1981, senior management set in motion Milliken's Pursuit of Excellence (POE), a commitment to customer satisfaction that pervades all company levels at all locations. The results are impressive, providing improvements in what had already been an enviable record of quality and performance. In independently conducted surveys, Milliken tops the competition in all 15 measures of customer satisfaction.

MILLIKEN AT A GLANCE

Headquartered in Spartanburg, South Carolina, the 124-year-old privately-owned company employs 14,300 workers, or what the company terms "associates," most at Milliken's 47 manufacturing facilities in the United States. Its 28 businesses produce more than 48,000 different textile and chemical products—ranging from apparel fabrics and automotive fabrics to specialty chemicals and floor coverings—for more than 8,500 customers worldwide. Annual sales exceed $1 billion.

PURSUIT OF EXCELLENCE

Commitment to quality and customer satisfaction begins at the company's highest levels, with Roger Milliken, chief executive officer, and Thomas J. Malone, chief operating officer, devoting more than half their time to Milliken's POE process.

Through the Policy Committee and Quality Council, top management creates the environment and provides the leadership for quality improvement, and it closely monitors the progress of each company unit toward quality goals.

PARTNERS FOR PROFIT

Milliken has achieved a flat management structure in which associates, working primarily in self-managed teams, exercise considerable authority and autonomy. Production work teams, for example, can undertake training, schedule work, and establish individual performance objectives. Moreover, any Milliken associate can halt a production process if that person detects a quality or safety problem.

The approach has worked so well that Milliken has reduced the number of management positions by nearly 700 since 1981, freeing up a large portion of the workforce for assignment as process improvement specialists. There has been a 77 percent increase in the ratio of production to management associates.

Teams are a hallmark of what observers now call the Milliken Quality Process. In 1988, 1,600 Corrective Action Teams were formed to address specific manufacturing or other internal business challenges, and about 200 Supplier Action Teams worked to improve Milliken's relationships with its suppliers. In addition, nearly 500 Customer Action Teams were formed to respond to the needs and aims of customers, including development of new products. Besides demonstrating a commitment to customer satisfaction, these teams created marketing opportunities that generated substantial additional sales revenue.

Complementing its many activities to extend the capabilities of its workforce, Milliken invests heavily in training. The company spent about $1,300 per associate in 1988. Training is also extended to Milliken's suppliers and customers. Each year since 1984, more than 7,500 visitors have received training in quality principles at Milliken's dedicated training facilities.

The recognition process, for both teams and individuals, is a highly visible, motivating force throughout the company. Recognition in many forms occurs with a wide variety of activities at all levels of the company. Participation by senior leadership is commonplace and extensive. Supplier recognition activities are a natural extension of those used within the company.

DYE TEAM MEETING CENTER

All quality improvement efforts are solidly based on factual information, contained in an array of standardized databases accessible from all Milliken facilities. Most manufacturing processes are under the scrutiny of real-time monitoring systems that detect errors and help pinpoint causes. The resultant data, some analyzed with the aid of computerized expert systems, support process improvement efforts to predict and prevent the causes of errors.

To speed progress in this area, process improvement specialists— the reassigned production managers—analyze and improve processes, including those in such non-manufacturing areas as billing and customer service. A substantial decrease in errors has been realized. Since 1981, a 60 percent reduction has been effected in the cost of non-conformance, which includes discounts for off quality, payment for freight on customer returns, and other cost items.

Milliken also maintains extensive databases on environmental and safety variables, suppliers, and customers, including the results of its extensive annual surveys on customer satisfaction. In addition, the company "benchmarks" the products and services of about 400 competitors, providing concrete measures for assessing its performance and for identifying marketing opportunities. Through this surveillance, Milliken determined, for example, that it trailed some competitors in meeting delivery targets. As a result, Milliken improved its record for on-time delivery from 75 percent in 1984 to an industry best of 99 percent in 1988.

Suppliers play an important role in Milliken's quality success. Through extensive efforts in developing supplier partnerships, the company has been able to reduce the number of its suppliers by 72 percent since 1981.

CUSTOMER RESPONSIVENESS

A key element of Milliken's approach to quality is customer responsiveness—providing what its customers need when they need it. Advanced technology developed by Milliken provides customers access to the company's state-of-the-art computer automated design system, which dramatically reduces the cycle time for new product development. Another critical element for textile users is the time to deliver sample material. Milliken's performance is considered the best in the textile business.

Roger Milliken has personally played a key role in pioneering quick response as an important strategy for American industry.

The company has been well recognized for achieving success for its customers. Milliken has received 41 major customer quality awards in the past five years, including a record five General Motors Mark of Excellence manufacturing awards. In addition, Milliken was voted the outstanding residential carpet manufacturer in the United States in 1988.

At Milliken, the Pursuit of Excellence is an evolving process that continuously yields new ideas for enhancing quality, increasing customer satisfaction, and improving business performance. Building on its quality successes, Milliken has established ambitious new objectives, called "Ten-Four" objectives, as a focus for future advances.

The company intends to achieve a ten-fold improvement in key customer-focused quality measures over the next four years. Each advance brings the innovative company closer to its long-range goal of a production system that is fully responsive to customer needs, providing, as Milliken says, "products that customers want, in the quantity they want, when they want them."

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Malcolm Baldrige
National
Quality
Award

1989 AWARD WINNER

XEROX CORPORATION BUSINESS PRODUCTS AND SYSTEMS

For its first 15 years, Xerox was without equal, best in an industry whose products were synonymous with its name. But challenges did come in the mid-1970s from foreign and U.S. competitors that surpassed Xerox reprographic products in both cost and quality.

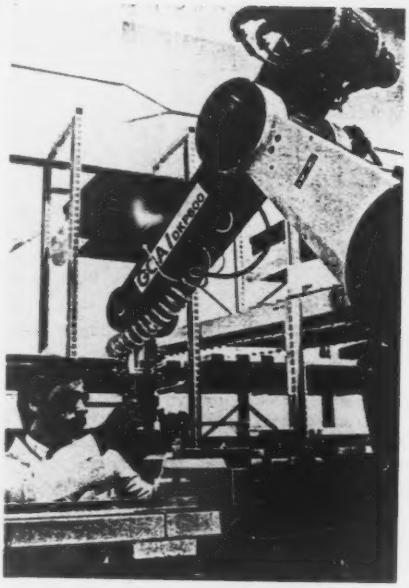
Not even second best in some product categories, Xerox launched an ambitious quality improvement program in 1984 to arrest its decline in the world market it created. Today, the company can once again claim the title as the industry's best in nearly all copier-product markets. As a result, Xerox has not only halted loss of world market share, but also reversed it.

Xerox Business Products and Systems (BP&S), headquartered in Stamford, Connecticut, attributes the turnaround to its strategy of "Leadership Through Quality." The company defines quality through the eyes of the customer. Xerox BP&S knows what customers want in products and services.

Analyses of a wide variety of data, gathered with exhaustive collection efforts that include monthly surveys of 55,000 Xerox equipment owners, enable the company to identify customer requirements. The company uses this information to develop concrete business plans with measurable targets for achieving quality improvements necessary to meet customers' needs.

XEROX AT A GLANCE

One of two Xerox Corporation businesses, Business Products and Systems employs 50,200 people at 83 U.S. locations. BP&S makes more than 250 types of document-processing equipment, generating $6 billion in 1988 U.S. sales, or 54 percent of the company's domestic revenues. Copiers and other duplicating equipment account for nearly 70 percent of BP&S revenues. The remainder is divided among sales of electronic printers and typing equipment, networks, workstations, and software products.

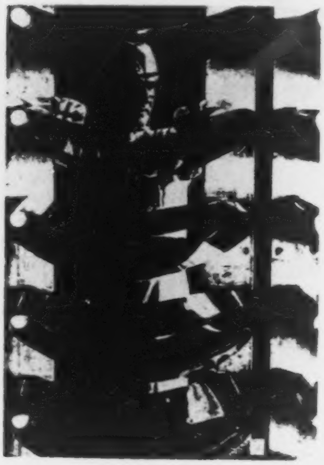


LEADERSHIP THROUGH QUALITY

Directed by CEO David T. Kearns and his senior management team, the "Leadership Through Quality" thrust has made quality improvement and, ultimately, customer satisfaction the job of every employee. All have received at least 28 hours of training in problem-solving and quality improvement techniques. The company has invested more than four million man-hours and $125 million in educating employees about quality principles.

Workers are vested with authority over day-to-day work decisions. And they are expected to take the initiative in identifying and correcting problems that affect the quality of products or services. Both salaried and hourly personnel have embraced these added responsibilities.

For example, the company's 1989 labor contract with the Amalgamated Clothing and Textile Workers' Union pledges employee support to "continuous quality improvement while reducing quality costs through teamwork and the tools and processes of Leadership Through Quality." This partnership with the union is considered a model by other corporations.



The phrase "Team Xerox" is not an empty slogan. It accurately reflects the firm's approach to tackling quality issues. Xerox BP&S estimates that 75 percent of its workers are members of at least one of more than 7,000 quality improvement teams. In 1988, teams in manufacturing and development were credited with saving $116 million by reducing scrap, tightening production schedules, and devising other efficiency- and quality-enhancing measures.

Teamwork also characterizes the company's relationship with many of its 480 suppliers. Suppliers are "process qualified" through a step-by-step procedure to analyze and quantify suppliers' production and control processes. Suppliers receive training and follow-up in such areas as statistical process control and total quality techniques; firms credit Xerox with improving their products and operations. For BP&S, increasing reliance on qualified suppliers over the last five years has reduced the number of defective parts reaching the production line by 73 percent.

Planning new products and services is based on detailed analyses of data organized in 375 information management systems, including 175 specific to planning, managing, and evaluating quality improvement. Much of this wealth of data has been amassed through an extensive network of market surveillance and customer feedback, all designed to support systematic evaluation of customer requirements. Over one-half of the company's marketing-research budget is allocated for this purpose, and each year its Customer Service Measurement System tracks the behavior and preferences of about 200,000 owners of Xerox equipment.

BENCHMARKING SYSTEM

In its quest to elevate its products and services to world-class status, Xerox BP&S devised a benchmarking system that has, in itself, become a model. The company measures its performance in about 240 key areas of product, service, and business performance. Derived from international studies, the ultimate target for each attribute is the level of performance achieved by the world leader, regardless of industry.

Returns from the company's strategy for continuous quality improvement have materialized quickly. Gains in quality over the last five years include a 78 percent decrease in the number of defects per 100 machines; greatly increased product reliability, as measured by a 40 percent decrease in unscheduled maintenance; increasing copy quality, which strengthened the company's position as world leader; a 27 percent drop (nearly two hours) in service response time; and significant reductions in labor and material overhead. These improvements have enabled Xerox BP&S to take additional steps to distinguish itself from the competition; for instance, it was the first in the industry to offer a three-year product warranty.

The thrust of "Leadership Through Quality" is ongoing with Xerox BP&S. The process of continuous quality improvement, directed toward greater customer satisfaction and enhanced business performance, is currently targeting by 1993 a 50 percent reduction in unit manufacturing cost and four-fold improvement in reliability. Such goals illustrate the commitment contained in the Xerox Quality Policy, which states that "quality is the basic business principle at Xerox."

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Malcolm Baldrige National Quality Award

1990 AWARD WINNER

CADILLAC MOTOR CAR COMPANY

To many car buyers, the Cadillac nameplate symbolizes the highest level of quality. But during the 1980s, competitors made determined efforts to wrest that reputation away and, until 1988, gained market share at Cadillac's expense.

But the maker of luxury automobiles has risen to the challenge. Over the last several years, its cars have improved markedly in quality, reliability, durability, and performance. Through its greatly expanded warranty coverage and unique new service offerings, including a nationwide Roadside Service program, Cadillac has intensified its commitment to the customer. And it has become a nimbler competitor, the result of a simultaneous engineering process guided by a finely tuned information system that helps translate buyer preferences and expectations into new product features and new services.

By effectively integrating quality into all endeavors—from product planning to personnel practices—Cadillac has reversed its decline in market share, attracting new buyers while boasting the highest percentage of repeat buyers in the car industry.

CADILLAC AT A GLANCE

Founded in 1902, Cadillac is the flagship division of the General Motors (GM) North American Automotive Operations. It manufactures or directs the production of nine car models—including two (Reatta and Riviera) marketed by the GM Buick division and one (Toronado) by the Oldsmobile division—that compete in the luxury segments of the automobile market. Cadillac models are the Allante, Brougham, Seville, Eldorado, DeVille, and Fleetwood.

Directed by General Manager John O. Grettenberger, Cadillac employs about 10,000 people at its Detroit-area headquarters, four Michigan-based manufacturing plants, and 10 sales and service zone offices in the United States. In the domestic market, which accounts for nearly 99 percent of sales, cars are sold through a network of 1,600 franchised dealerships, partners in the division's quality improvement efforts.

CUSTOMER SATISFACTION AS THE MASTER PLAN

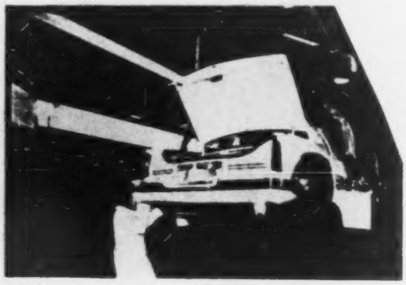
Cadillac's turnaround began in 1985. That's when top management started implementing simultaneous engineering (SE). SE contrasts sharply with the traditional serial approach to automobile development and manufacturing, in which individual departments functioned largely in isolation from the others.

Product design and development now begin with integrated knowledge of all essential elements, including performance targets, product features, systems and parts, processes, and maintenance requirements. Thus, SE anticipates how changes in one functional area will affect the others, making it easier to prevent problems and bottlenecks, to determine in advance how to monitor and control production processes, and to identify opportunities for quality improvement.

The effectiveness of SE, however, hinges critically on carefully orchestrated teamwork. More than 700 employees and supplier representatives now participate on SE teams responsible for defining, engineering, marketing, and continuously improving all Cadillac products. Their coordinated efforts on three recent major styling changes trimmed 50-85 weeks from what typically had been a 175-week process.

Successes achieved by SE teams were the springboard to a complete transformation in Cadillac's quality culture. Its partnerships with the United Auto Workers (UAW) have been a catalyst in this transformation. Along with Cadillac executives and plant managers, union leaders serve on the Divisional Quality Council, which is part of the UAW/GM Quality Network. At Cadillac, the Quality Network also includes plant councils at each of its seven major facilities, which are supported by the efforts of nearly 600 work teams and cross-functional teams, each composed of between 10 and 15 hourly and salaried employees.

Pledging to involve its employees "in the running of the business," Cadillac solicits the views of all employee teams during the preparation of its annual business plans, which embody short- and long-term quality improvement goals. The open, yet disciplined, planning process, guided by analyses of information in more than 50 databases, culminates with the completion of detailed quality plans for plants and staff units. These plans translate business objectives into discrete measurable actions carried out by teams and individuals. Progress is closely monitored, and feedback is provided in weekly team meetings. Feedback is also provided through individual and team recognition awards.



A comprehensive program of competitive analyses—of products; product features; services; and planning, development, and manufacturing processes—provides Cadillac management and employees with a clear picture of what the division must do to maintain or achieve world-class status in each category.

Thorough planning is also a hallmark of Cadillac's "people strategy" for improving the effectiveness and job satisfaction of hourly and salaried employees' efforts. Especially close attention is paid to educational needs. Each plant and staff unit has a Training Priorities Committee to determine what skills and knowledge workers must have to accomplish quality goals, and training programs are crafted to individual needs. In 1990, for example, skilled hourly personnel will receive a minimum of 80 hours of formal instruction in such areas as quality improvement, leadership skills, process modeling, statistical methods, and health and safety.

Suppliers and dealers also are fully integrated into Cadillac's customer-focused quality improvement efforts. Three-fourths of the division's 55 Product Development and Improvement Teams have suppliers as members. External suppliers must demonstrate continuous improvement in meeting "targets for excellence" in five key areas: quality, cost, delivery, technology, and management. A well-developed assessment and part qualification process assures conformance, eliminating the need for regular inspection of shipments.

In reliability and durability tests equivalent to 100,000 miles of customer use and 10 years of corrosion exposure, all models have improved markedly, as determined from measures of the "number of things gone wrong" during the test. For all nine models, the number of such problems decreased between 27 percent and 71 percent since 1986 or, for new models, since production began. In tests of 1990 and 1991 cars, nearly all models met or exceeded world-class levels for reliability and durability.

For the customer, these product improvements and Cadillac's commitment to improving service have resulted in expanded warranty coverage—to a minimum of four years or 50,000 miles, as compared with one year or 12,000 miles in 1988. Improved product quality, however, has resulted in a 29-percent drop in warranty-related costs during the first year or 12,000 miles, from 1986 to 1989.

In step with service and product quality, customer satisfaction has risen, as measured through extensive surveys and analyses of complaints handled by its 24-hour Customer Relations Center, for instance. On three key measures—satisfaction with cars, service, and total ownership experience—1985 customers rated Cadillac at about 70 percent. In 1989, Cadillac's scores in all three categories were 86 percent or better.

Cadillac

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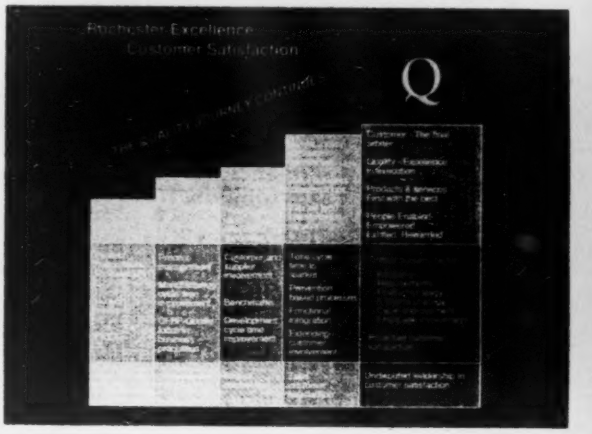
Malcolm Baldrige
National
Quality
Award

1990 AWARD WINNER

IBM ROCHESTER

The concept of quality at IBM Rochester is linked directly to the customer. Detailed features are crafted by analyzing the needs and expectations of existing and potential owners of the computer hardware and software manufactured by the Rochester, Minn., site of the International Business Machines Corporation. At every step, customers are directly involved in each aspect of the product from design to delivery—through advisory councils, global information systems, trials of prototypes, and numerous other feedback mechanisms.


Rochester Excellence
Customer Satisfaction
Q
Customer - The final arbiter
Quality - Excellence in execution
Products & services First with the best
People Enabled, Empowered, Excited, Rewarded
Customer and supplier involvement
Benchmarking
Development cycle time improvement
Total cycle time to market
Prevention based processes
Functional integration
Extending customer involvement
Undisputed leadership in customer satisfaction

The IBM Rochester quality culture has been transformed from reliance on technology-driven processes delivering products to market-driven processes directly involving suppliers, business partners, and customers delivering solutions. A 30 percent improvement in productivity occurred between 1986 and 1989. Product-development time for new mid-range computer systems has been reduced by more than half, while the manufacturing cycle has been trimmed 60 percent since 1983. Customers have benefited from a threefold increase in product reliability; an increase from 3 to 12 months in the product warranty period; and a cost of ownership that is among the lowest in the industry. IBM's share of the world market for intermediate computers increased in both 1988 and 1989.

IBM ROCHESTER AT A GLANCE

IBM Rochester manufactures intermediate computer systems—currently the AS/Entry Systems and the Application System/400 (AS/400). More than 400,000 IBM Rochester systems have been installed worldwide. This location also makes hard disk drives, which are electromechanical devices that store and retrieve information on magnetic disks. Sales of hard disk drives accounted for about a fifth of IBM Rochester's revenues in 1989.

IBM Rochester provides employment to more than 8,100 people and is responsible for product development and U.S. manufacturing. In addition, its processes are implemented in plants located in Japan, Mexico, United Kingdom, and Italy.

"ROCHESTER EXCELLENCE...CUSTOMER SATISFACTION"

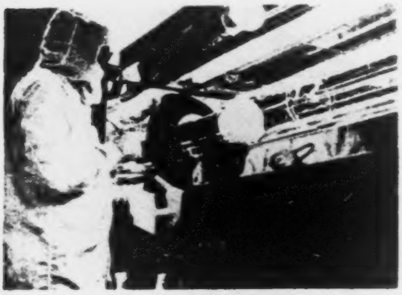
IBM Rochester recently strengthened its strategic quality initiatives by formulating improvement plans based on six critical success factors: improved product and service requirements definition, an enhanced product strategy, a six-sigma defect elimination strategy, further cycle time reductions, improved education, and increased employee involvement and ownership. Each senior manager "owns" one of the six factors and assumes responsibility for plans and implementation. Progress toward achieving improvement goals is closely monitored. Support processes are a part of this network.

The continuous improvement of support processes at IBM Rochester rests on aggressive worldwide benchmarking, a process that analyzes products and services to determine the best of the breed in all industries. Over

350 teams are in place to work on opportunities. Scores of benchmarking studies have been completed.

Quality goals are established in five-year business plans and annual operating plans. Strategic targets are derived from its comprehensive benchmarking process. With the aid of financial planning models and mathematical decision-making tools, quality priorities are set, and the resources—human and capital—necessary to carry out these priorities are determined.

Most plans for achieving quality objectives originate with employees, and cross-functional teams identify needs for equipment, staffing, education, and process development. Each quality improvement plan has an owner—a managerial or non-managerial employee who heads the project team. With employee input, objectives and requirements are established for each employee, and a measurement system for monitoring progress is developed in advance of the project. Close coordination and efficient communication are ensured through regular planning meetings, in which key suppliers and customers participate.



IBM Rochester invests heavily in education and training, the equivalent of 5 percent of its payroll. Employees, supported by IBM's tradition of full employment, are encouraged to develop the skills and expertise for a variety of jobs. In 1989, about a third of the work force moved into new positions, and 13 percent were promoted. IBM Rochester is implementing a Management System for Education, which will offer skill planning, needs assessment, individual education plans, and education road maps on-line. Job flexibility and security, ample opportunity for advancement, and a well-developed recognition process are among factors contributing to rates of absenteeism and turnover that are well below national averages. Employee contributions to quality improvement are recognized in a variety of ways, including luncheons, receptions, and monetary and non-monetary awards. Morale is high, as determined in IBM annual surveys, and by an independently conducted survey that compares levels of worker satisfaction at 34 U.S. companies.

Equipping workers with the tools and information they need to accomplish quality and customer satisfaction objectives is also a priority. Over 11,000 on-line terminals provide employees with worldwide access to extensive communication capabilities, databases, and design and analysis tools. For example, since 1986, IBM has invested more than $300 million in improving its processes and information systems. Such investments, many of them designed to improve problem-solving capabilities ensuring that defects are prevented rather than detected after they occur, have paid for themselves. Capital spending on equipment for defect detection declined 75 percent during the 1980s, and write-offs as a proportion of manufacturing output dropped 55 percent.

At the start of the product planning process, suppliers are included as partners to ensure that new hardware and software will achieve IBM goals for manufacturability, serviceability, reliability, performance, and cost. Accounting for about 30 percent of production output, IBM Rochester's approximately 700 production suppliers are expected to provide defect-free shipments and to keep pace with its progress in improving quality and reducing development and manufacturing cycles. Suppliers are trained, audited, and certified, and they are required to submit quality plans. IBM Rochester shares its own state-of-the-art technology with suppliers and, in turn, suppliers provide valuable expertise to IBM. Since 1984, IBM Rochester employees have instructed more than 1,000 supplier employees on continuous flow manufacturing, statistical process control, and design of experiments.

The Rochester quality process is a continuous loop that begins, ends, and begins again with the customer. Of the approximately 40 data sources analyzed to guide improvement efforts, most either provide information on customers' product and service requirements or guide steps to refine these expectations into detailed specifications for new IBM offerings. Customers are also active participants. For example, customers and business partners representing over 4,500 businesses worldwide participated on customer advisory councils throughout the development of the AS/400.

To strengthen its competitive quality position, IBM Rochester is aiming for a tenfold improvement in key quality areas by 1991, a hundredfold improvement by 1993, and a six sigma level of defects by 1994.

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Malcolm Baldrige
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Award

1990 AWARD WINNER

FEDERAL EXPRESS CORPORATION

Seventeen years ago Federal Express Corporation launched the air-express industry. By constantly adhering to a management philosophy emphasizing people, service, and profit, in that order, the company achieved high levels of customer satisfaction and experienced rapid sales growth. Annual revenues topped $1 billion within 10 years of the company's founding, an exceptional achievement.

But past accomplishments do not ensure future success. That's why the management of Federal Express is setting ever higher goals for quality performance and customer satisfaction, enhancing and expanding service, investing heavily in advanced technology, and building on its reputation as an excellent employer. Company leaders are increasingly stressing management by fact, analysis, and improvement.

Through a quality improvement process focusing on 12 Service Quality Indicators (SQIs), all tied to customer expectations and articulated at all levels of its international business, the Memphis-based firm continues to set higher standards for service and customer satisfaction. Measuring themselves against a 100-percent service standard, managers and employees strive to improve all aspects of the way Federal Express does business.

FEDERAL EXPRESS AT A GLANCE

Conceived by Chairman and Chief Executive Officer Frederick W. Smith, Federal Express began operations in 1973. At that time a fleet of eight small aircraft was sufficient to handle demand. Five years later, the company employed 10,000 people, who handled a daily volume of 35,000 shipments. Today, approximately 90,000 Federal Express employees, at more than 1,650 sites process 1.5 million shipments daily, all of which must be tracked in a central information system, sorted in a short time at facilities in Memphis, Indianapolis, Newark, Oakland, Los Angeles, Anchorage, and Brussels, and delivered by a highly decentralized distribution network. The firm's air cargo fleet is now the world's largest.

Federal Express revenues totaled $7 billion in fiscal year 1990. Domestic overnight and second-day deliveries accounted for nearly three-fourths of the total, with the remainder being international deliveries. The company's share of the domestic market in 1989 was 43 percent, compared with 26 percent for its nearest competitor.

PEOPLE-SERVICE-PROFIT

Federal Express's "People-Service-Profit" philosophy guides management policies and actions. The company has a well-developed and thoroughly deployed management evaluation system called SFA (Survey/Feedback/Action), which involves a survey of employees, analysis of each work group's results by the work group's manager, and a discussion between the manager and the work group to develop written action plans for the manager to improve and become more effective. Data from the SFA process are aggregated at all levels of the organization for use in policymaking.

Training of front-line personnel is a responsibility of managers and "recurrency training" is a widely used instrument for improvement. Teams regularly assess training needs and a worldwide staff of training professionals devise programs to address those needs. To aid these efforts, Federal Express has developed an interactive video system for employee instruction. An internal television network, accessible throughout the company, also serves as an important avenue for employee education.

Consistently included in listings of the best U.S. companies to work for, Federal Express has a "no lay-off" philosophy, and its "guaranteed fair treatment procedure" for handling employee grievances is used as a model by firms in many industries. Employees can participate in a program to qualify front-line workers for management positions. In addition, Federal Express has a well-developed recognition program for team and individual contributions to company performance. Over the last five years, at least 91 percent of employees responded that they were "proud to work for Federal Express."

SERVICE QUALITY INDICATORS

To spur progress toward its ultimate target of 100-percent customer satisfaction, Federal Express recently replaced its old measure of quality performance—percent of on-time deliveries—with a 12-component index that comprehensively describes how its performance is viewed by customers. Each item in the Service Quality Indicator (SQI) is weighted to reflect how significantly it affects overall customer satisfaction.

Performance data are gathered with the company's advanced computer and tracking systems, including the SuperTracker, a hand-held computer used for scanning a shipment's bar code every time a package changes hands between pick-up and delivery. Rapid analysis of data from the firm's far-flung operations yields daily SQI reports transmitted to workers at all Federal Express sites. Management meets daily to discuss the previous day's performance and tracks weekly, monthly, and annual trends. Analysis of data contained in the company's more than 30 major databases assists quality action teams (QATs) in locating the root causes of problems that surface in SQI reviews. Extensive customer and internal data are used by cross-functional teams involved in the company's new product introduction process.

To reach its aggressive quality goals, the company has set up one cross-functional team for each service component in the SQI. A senior executive heads each team and assures the involvement of front-line employees, support personnel, and managers from all parts of the corporation when needed. Two of these corporatewide teams have a network of over 1,000 employees working on improvements.

The Service Quality Indicator measurements are directly linked to the corporate planning process, which begins with the CEO and COO and an executive planning committee. SQIs form the basis on which corporative executives are evaluated. Individual performance objectives are established and monitored. Executive bonuses rest upon the performance of the whole corporation in meeting performance improvement goals. And, in the annual employee survey, if employees do not rate management leadership at least as high as they rated them the year before, no executive receives a year-end bonus.

Employees are encouraged to be innovative and to make decisions that advance quality goals. Federal Express provides employees with the information and technology they need to continuously improve their performance. An example is the Digitally Assisted Dispatch System (DADS), which communicates to some 30,000 couriers through screens in their vans. The system enables quick response to pick-up and delivery dispatches and allows couriers to manage their time and routes with high efficiency.

Since 1987, overall customer satisfaction with Federal Express's domestic service has averaged better than 95 percent, and its international service has rated a satisfaction score of about 94 percent. In an independently conducted survey of air-express industry customers, 53 percent gave Federal Express a perfect score, as compared with 39 percent for the next-best competitor. The company has received 195 awards over the last 13 years, and representatives of nearly 600 businesses and organizations have visited its facilities.

FEDERAL EXPRESS

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Malcolm Baldrige
National
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Award

1990 AWARD WINNER

WALLACE CO., INC.

Wallace Co., Inc., a Houston-based industrial distribution company, bucked the conventional business wisdom during the mid-1980s. With the Gulf Coast economy in the doldrums and new construction activity—its primary source of revenues—at a standstill, Wallace avoided short-term remedies, and pursued a long-term strategy of Continuous Quality Improvement.

In only a few years, Wallace has distinguished itself from its competitors by setting new standards for service. It has emerged as a stronger firm with a rapidly growing sales volume, steadily increasing market share, and better profit performance.

Now entering the final stage of the three-phase quality program it initiated in 1985, Wallace has effectively merged business and quality goals, built new partnerships with customers and suppliers, and instilled associates with a commitment to one overriding aim: total customer satisfaction.

WALLACE AT A GLANCE

Founded in 1942, Wallace is a family-owned distribution company primarily serving the chemical and petrochemical industries. Its 10 offices, located in Texas, Louisiana, and Alabama, distribute pipe, valves, and fittings, as well as value-added specialty products such as actuated valves and plastic-lined pipe. Wallace distributes directly in the Gulf Coast area but serves international markets as well.

In tandem with its move to Continuous Quality Improvement, Wallace shifted its marketing focus from engineering and construction activities to maintenance and repair operations, now the source of 70 percent of its sales. In 1989, sales totaled $79 million. The company employs 280 associates, all of whom have been trained in quality improvement concepts and methods.

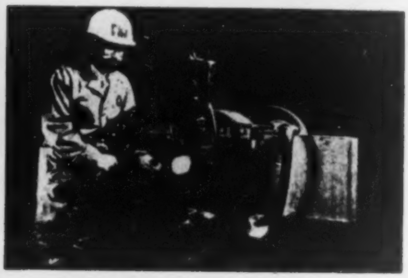
"CONTINUOUS QUALITY IMPROVEMENT"

The seeds of the Wallace quality process were sown and cultivated by the company's five top leaders, directed by John W. Wallace, Chief Executive Officer, and C.S.Wallace, Jr., President. Comprising the Quality Management Steering Committee, each of the five has undergone more than 200 hours of intensive training on the methods and philosophy of Continuous Quality Improvement. Their hands-on involvement is typified by the participation of at least one senior leader in all quality activities, including on-the-job training for associates.

Leadership drafted the company's Quality Mission Statement, which was circulated throughout the company. Embodying input from all associates, the final document serves as Wallace's public commitment to Continuous Quality Improvement. It is distributed to all associates, customers, and suppliers. Furthermore, Wallace developed 16 Quality Strategic Objectives—nine of which focus on improving customer satisfaction—to guide business decision making. In fact, business and quality aims are one and the same, formulated in Wallace's Quality Business Plan.

Associates are responsible for devising and carrying out plans to accomplish objectives under the company's cooperative, yet centralized, approach to quality improvement. Since 1985, participation on teams, whose membership is voluntary and cuts across departmental and district office boundaries, has increased sixfold. Team planning and decision making are greatly aided by an extensive set of customer-focused databases, accessible to all associates through the company's computer system. Teams are assisted by 12 statistical process control (SPC) coordinators, who chart trends, conduct failure mode effects analysis to isolate real and potential problems, and evaluate progress in accomplishing quality objectives. Each district office has at least one SPC coordinator on staff, and one day a week at all sites is devoted to evaluating and planning quality improvements.

Wallace has fixed its sights on providing the products and services that best meet the needs of its regional market, but the scope of its quality improvement efforts is truly worldwide. Measurable quality benchmarks are identified in global searches for the top-performing companies in each category of service or business operation, from on-time delivery to safety performance.



Not only does Wallace comprehensively monitor its activity—it has identified and now measures 72 discrete processes that contribute to on-time delivery and accurate invoicing—but it invites the scrutiny of customers. Customers receive computer-generated reports that document how well the company has been servicing its accounts. Customer feedback is ensured through four types of surveys, "partnering" meetings, frequent contacts by sales representatives, and a Total Customer Response Network that must respond to all inquiries and complaints within 60 minutes.

Moreover, customers have access to some of Wallace's databases. Wallace also has led the way in converting customers to Electronic Data Interchange. Both Wallace and its customers reap the advantages of better inventory management, time savings, error reduction, and more accurate data. About 40 percent of Wallace's sales orders are now handled electronically, compared with less than 5 percent in 1988.

Wallace holds suppliers to its same high standards, requiring firms to provide statistical evidence of the quality of their shipments and to guarantee their products for a minimum of 12 months. Based on its quality surveillance measures, the distributor has trimmed the number of its suppliers to 325, down from more than 2,000 in 1987. To ensure that suppliers consistently provide products meeting the expectations of customers, Wallace provides training in Continuous Quality Improvement, a first in the industry. Last year, 15 suppliers initiated processes based on the Wallace model. In another pioneering initiative spawned by a committee of Wallace, customer, and supplier representatives, the company has implemented a vendor certification process, in which Wallace and its major customers will jointly assess the quality processes of suppliers.

Because associates drive quality improvement, Wallace has invested about $2 million in formal training between 1987 and the end of 1990. Teams of associates closest to a specific area targeted for improvement are charged with identifying the steps necessary to accomplish a quality objective, with standardizing the methods to assure consistent performance, and with conducting the necessary training at all departments and offices.

"Quality wins" are reported in the company's monthly newsletter, acknowledged in congratulatory letters from the CEO, and rewarded with dinners for the responsible associates and their families or with team picnics.

Simultaneous with management's efforts to increase associate involvement in Continuous Quality Improvement, rates of absenteeism, turnover, and work-related injuries have dropped sharply. New associate-led projects are intended to foster greater dedication and higher levels of job satisfaction. For example, teams are studying ways to enhance career development opportunities. In a newly begun program, each associate will visit at least one customer site to discuss service performance.

These and other initiatives have paid numerous dividends. Since 1987, Wallace's market share has increased from 10.4 percent to 18 percent. Its record of on-time deliveries has jumped from 75 percent in 1987 to 92 percent in 1990. By July 1991, the distributor has committed to guarantee all customers an on-time delivery rate of 98 percent. Its customer base has grown, while existing clients have increased their business. As a result, sales volume has grown 69 percent and, because of greater efficiency, operating profits through 1989 have increased 7.4 times. Wallace has earned numerous awards from customers in recent years, verifying its high and improving status as a quality supplier.

For more information, contact:

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APPENDIX I

BIBLIOGRAPHY

Bibliography of Resources Available through the Malcolm Baldrige National Quality Award Office

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Visuals:

- 35 mm color slide of the Baldrige Award
- 8" x 10" color glossy of President Bush, Roger Milliken (Milliken & Co.) and David Kearns (Xerox Corp.)
- 8" x 10" color glossy of President Bush, Roger Milliken, David Kearns and U.S. Commerce Secretary Robert Mosbacher
- 8" x 10" color glossy of President Bush, U.S. Commerce Secretary Robert Mosbacher, John Akers (IBM Corp.), John O. Grettenberger (Cadillac Motor Car Division), Frederick W. Smith (Federal Express Corp.) and John W. Wallace (Wallace Co., Inc.)

Videos:

- Malcolm Baldrige National Quality Award and the U.S. 1988 Quality Award Winners.
- The Malcolm Baldrige National Quality Award -- 1989

APPENDIX IV

QUALITY PROGRESS JULY 1989

The Baldrige Award: Leading the Way in Quality Initiatives

Organizations across the country are using the award's quality guidelines, and there are even more potential uses.

**by
Curt W. Reimann**

THE MALCOLM BALDRIGE NATional Quality Improvement Act of 1987 (Public Law 100-107) created an annual quality award for the United States, launching a national quality improvement initiative. The purposes of the Malcolm Baldrige Award are threefold:

1. Promote quality awareness
2. Recognize quality achievements of U.S. businesses
3. Publicize successful quality strategies

There are three categories for awards: manufacturing, services, and small businesses. Up to two awards may be given in each category each year, and recipients may publicize and advertise based on their awards.

The first awards under the National Quality Award Program were presented by President Ronald Reagan on Nov. 14, 1988. Award winners were Motorola Inc. and the Commercial Nuclear Fuel Div. of Westinghouse Electric Corp. in the manufacturing category, and Globe Metallurgical Inc. in the small business category. No awards were made in the services category. The award winners for 1988 are showing outstanding leadership and initiative in sharing their successful strategies with other organizations.

Awards are made on the basis of a three-stage review process:

1. Evaluation of written examinations submitted by applicants
2. Site visits to companies that score high on the written examination to review strengths and areas for improvement as revealed in the written examination
3. Final judging of overall results—written examination and site visit reports

The written examination plays a central role in the award process (see sidebar, "The Design and Uses of the Award Examination"). Because of its importance, it was designed to provide a complete profile of each applicant's overall quality management. This feature makes it adaptable for uses other than award competition. In the first year of the award program, 66 companies applied for awards, but thousands of organizations, including many ineligible for awards, requested copies of the examination. Copies of the examination were distributed well past the application deadline. Follow-up discussions with many applicants and nonapplicants revealed that the examination is already being used for many different purposes.

Figure 1. A typical examination item.

3.2 PLANS FOR QUALITY LEADERSHIP

3.2.1 (25 points on the 1,000-point scale) Outline the company's approach to selecting quality-related data for competitive comparison and world-class benchmarks and how it analyzes and uses these data to plan for quality.

Areas to address

ⓐ Basis for selection of criteria for competitive comparisons and world-class benchmarks.

ⓑ Sources of competitive and benchmark data.

ⓒ Scope of competitive and benchmark data: product and service quality, business operations, processes, employee-related, customer service, and other.

ⓓ Types of analyses carried out on competitive comparison and benchmark data to plan for quality.

ⓔ Principal roles competitive and benchmark data and analyses play in company planning.

Evaluation criteria

The evaluation criteria are an important adjunct of the award examination. They not only are the basis of assessing award applications, but also represent an extension of the examination's value system. The criteria are particularly important in projecting the meaning of "total" in total quality management.

The evaluation system for scoring and judging applicant responses is based on three factors:

1. Approach: refers to the methods used to achieve the purposes addressed in the examination items. The scoring criteria used to evaluate approaches include topics such as: the degree to which the approach is prevention based; the appropriateness and effectiveness of the tools, techniques, and methods to the application; the degree to which the approach is systematic, integrated, and consistent.

The Baldrige Award: Leading the Way in Quality Initiatives cont.

2. **Deployment**: refers to the extent to which the approaches are applied to all relevant areas and activities that are addressed and implied in the examination items. The scoring criteria used to evaluate deployment include topics such as: the appropriate and effective application of all transactions and interactions with customers, providers of goods and services, and the public; the appropriate and effective application to all internal processes, activities, facilities, and employees; and the appropriate and effective application to all product and service characteristics.

3. **Results**: refers to outcomes and effects in achieving the purposes addressed and implied in the examination items. The scoring criteria used to evaluate results include topics such as: the quality levels demonstrated; the contributions of the outcomes and effects to quality improvement; the quality improvement gains; the demonstration of sustained gains; and the company's ability to account for gains in terms of specific quality improvement actions.

All examination items require applicants to furnish information, which is then evaluated on the basis of one or more of these dimensions. A typical examination item is shown in Figure 1.

Major uses of the award examination

As indicated earlier, the award examination is meant not only to permit evaluation of excellent manufacturing and service businesses. It was designed as a value system, an education/communications tool, a vehicle for cooperation, and a device to help evaluate quality standards. It is adaptable to the needs of any organization, and is being used throughout the United States in four basic areas: assessment, setting up a quality system, communications, and education and training.

Assessment

The most significant uses of the award examination to date involve assessment--self-assessment, assessment of suppliers, and evaluation of candidates for awards. Of these, the largest use is in self-assessment, either of overall company efforts or of those of individual units, functions, or plants. Users report that the examination provides an objective and externally directed framework, sets a high standard, and helps compare units that have different systems or organizations. It is also being used (suitably modified) for giving awards within companies and at the local, state, and federal levels.

> ***Only a small fraction of those with systematic quality processes have a total quality focus.***

Experience with the Baldrige Award and comments by those using the award examination in assessment show that assessments should be done by people broadly knowledgeable in quality management and thoroughly familiar with the examination and the evaluation criteria. Practice is required for even the most experienced people, because few have had the chance to evaluate total quality management systems and progress on a quantitative scale. Practice should involve the use of case materials consisting of a real or fictitious organization's responses to the examination items. Assessors must agree on how to anchor the rating scale and which of the evaluation criteria they will link to each item.

Because of variability in scoring, particularly at early stages, a multiple-scoring, consensus process is recommended. Consensus development is greatly facilitated by including comments on strengths and weaknesses with scores. This procedure can reveal differences in the assessors' standards, scales, methods, and philosophies. Consensus helps calibrate a group to key values and helps experts learn from one another. It not only helps to make evaluations consistent, but also ensures that comments are consistent, leading to meaningful feedback.

Setting up a quality system

Organizations getting started in quality improvement often have problems defining the quality system they need or selecting objectives. Time and resources might be wasted in shopping around among alternative and sometimes competing approaches, techniques, systems, and emphases. Because the award examination addresses the full range of quality issues, it can help those setting up new systems to get a complete, integrated picture of total quality management.

On the most basic level, the examination categories, items, and areas to address constitute a checklist of all the issues—and the interrelationships among these issues—that must be understood. One advantage to using the examination as a checklist is the emphasis on goals and overall requirements, rather than on organization and techniques. The latter are better decided after the more basic decisions have been made.

Another advantage to using the examination in setting up a quality system is that it should help management develop a shared meaning of quality and total quality management, which can be built into the organization's goals and policies. Its use should also lead to the early creation of measurement systems to establish performance baselines, to teach familiarity with measurement, and to serve as a motivational tool to translate initial quality improvement gains into enthusiasm and involvement. Many later benefits could be derived from the early training of assessors based on the examination and evaluation criteria.

Communications

Another major use of the award examination is in the area of communications. This includes communication within companies, between companies and suppliers, and among companies seeking to share information on quality. The award examination provides a focus on what to communicate and offers a framework for comparing strategies, methods, progress, and benchmarks.

Communication between service and manufacturing companies is currently less than that within these individual business areas. This lack of communication is costly. For example, the best manufacturing companies—which have strong measurement systems, process controls, and prevention-based systems—are moving to strengthen their customer services and their internal service operations. At the same time, the best service companies—which have strong customer service systems—are moving to strengthen their process controls, measurements, and prevention orientations. Clearly, both industries could derive much benefit through more sharing of ideas. The award examination offers a convenient device for such sharing to take place.

Education and training

Education and training of management and operating personnel are now recognized as key to quality improvement. First-year award winners and other excellent companies are investing heavily in employees and are reporting large returns on these investments.

The award examination is being used as an adjunct to training and education, particularly at the management level. The examination represents a distillation of the major issues managers must understand. It helps draw distinctions between how the best companies operate in comparison to other companies. It can also be used to set a context for training specialists, especially in giving them an overall picture of the company's aims, which units must cooperate, and what quality means in their discipline.

> ***The evaluation system for scoring and judging applicant responses is based on three factors: approach, deployment, and results.***

Used in education and training, the award examination adds an evaluation dimension and introduces the concept of levels of excellence. One approach to using the examination is to supplement education and training courses with case materials set in the context of the examination, teaching both evaluation and the characteristics associated with excellence.

Potential uses of the award examination

These uses of the award examination are key to the evolution of the national quality campaign launched through Public Law 100-107. The pace of this campaign would be greatly accelerated if U.S. organizations with influence throughout the entire economy would enlarge their roles in the national quality improvement effort. These groups include trade, professional, business, and economic development associations, accrediting and evaluating organizations, and business schools. The following examples show how the award examination can be used to support the quality improvement efforts of these organizations and help strengthen the overall national campaign.

Trade and business associations

A main concern of trade and business associations is the vitality of their industries and the companies they represent. Quality has become a major issue in many industries and businesses, particularly those experiencing strong competition from abroad or seeking to expand exports. Many firms are eliminating suppliers that cannot meet their increasingly demanding quality requirements.

Trade and business associations exert a great deal of influence on the course of business in the United States and provide many useful services to member companies. These associations could help improve the quality competitiveness of their members in many ways, including:

- Give association leaders a general overview of total quality management, quality trends, and the national campaign.
- Promote quality awareness by making copies of the examination available to member companies and encouraging them to apply for an award and to share their experiences.
- Provide new services such as training in quality management and in quality assessment.
- Include presentations and sessions on quality management in conferences and workshops.
- Use the framework of the examination to compare foreign and domestic firms that have achieved success through quality improvement.
- Develop and disseminate excellence indicators and benchmarks to focus on key areas where performance should be measured and improved.

Professional societies

Professional societies provide a wide variety of services to support members' professional development. As quality becomes a more important factor in the management of their individual organizations, they must understand how quality management relates to their disciplines. Education and training programs for specialists should include some instruction in quality management principles. This would help them understand the changes occurring in the work environment, and the changing role of specialists in this environment. The award examination provides a convenient framework for describing quality management.

The award examination can serve as a device for defining total quality management and for instruction in quality management principles. It can also serve as a framework for teaching problem-solving skills in professional disciplines and provide a guide for organizing workshops and symposia on quality.

> ***Organizations getting started in quality improvement often have problems defining the quality system they need or selecting objectives.***

State, regional, and area economic development groups

Many states, regions, and areas have suffered serious erosion of their economic base because of imports, resulting in the closing or downsizing of companies. In recent years, state and local governments, universities, and private groups have de-

Malcolm Baldrige
National
Quality
Award

The Design and Uses of the Malcolm Baldrige Award Examination

The creation of the Malcolm Baldrige Award program and the award examination presented a challenge: how to best serve the national interest, taking into account the three purposes of the program—recognition, awareness, and information transfer. These three purposes translate into one true goal and one ultimate measure of the program's success: wide-scale and timely improvement of quality management in the United States. Dependence on recognition alone—a common attribute of awards—might not provide enough impetus for major change, particularly at the desired pace.

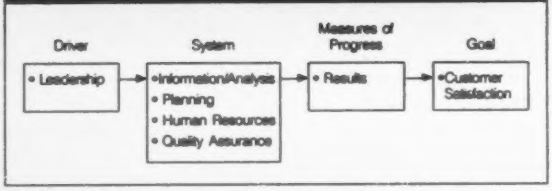
The starting point in the design was a customer needs assessment (the customer being the United States), which characterized the status of quality management in the United States. The following facts became clear during this needs assessment:

- Most organizations—businesses, government agencies at all levels, associations, schools, and health care institutions—do not have systematic total quality improvement processes.
- Many organizations are just getting started in quality improvement and encounter disagreements over concepts, techniques, terminology, and emphasis.
- Only a small fraction of those with systematic quality processes have a total quality focus; often there is a disparity in approaches and maturity among the quality processes in different departments and operating units.
- Most trade, business, and professional associations have minimal quality management focus, either in their headquarters operations or as a service to their members.
- Most accrediting, evaluation, regulatory, and procurement bodies have no process in place to foster systematic quality improvement efforts or standards in organizations under their purview.
- Most business schools devote minimal attention to quality management in curricula, and quality is not a major research area.
- More organizations are sharing information on quality strategies. The best quality companies are the most active in sharing. However, sharing of strategies between service and manufacturing businesses is small compared to the sharing going on within these business areas.

Hence, while the basic purpose of the award examination is to serve as a device for evaluating the best U.S. companies, it can and should also be used as a tool for education/communication and cooperation. To serve those three purposes—evaluation, education/communication, and cooperation—the overall examination structure includes the following elements:

1. A framework consisting of the basic requirements of total quality management, applicable to manufacturing and service organizations. The framework comprises four main elements: the goal, the "driver" of the system, the system itself, and measures of progress. The examination designed to meet these requirements consists of seven categories: leadership, information and analysis, strategic quality planning, human resources utilization, quality assurance of products and services, quality results, and customer satisfaction.

Figure 2. The examinations four basic framework elements and seven examination categories



The relationship between the four basic framework elements and the seven examination categories is shown in Figure 2. Together, the examination categories provide a broad operational definition of total quality management.

2. Within the seven categories, examination items address key diagnostic indicators of excellence and continuity which, taken together, project the value system for total quality management.

3. Annual updates of the diagnostic indicators must be made through a consensus process to ensure that the value system evolves as learning takes place (continuous improvement).

4. A set of evaluation criteria that can be used to diagnose progress in quality management.

veloped cooperative efforts to stimulate economic development. Strategies include technical and economic aid, tax incentives to attract new businesses, and the creation of partnerships.

Some states and areas are now including quality in their economic development plans. Quality councils involving businesses, business associations, governments, hospitals, and schools have begun to form to support and develop quality initiatives. These councils recognize that factors such as quality of management, quality of the work force, and governmental, educational, and medical services are important in attracting new businesses and in stabilizing and expanding existing businesses.

The award examination is well suited to support state and local quality council initiatives because it was designed as a tool for communication among diverse organizations. State and local quality activities that could make use of the award examination include:

- giving council leaders a general overview of total quality management, quality trends, and the national campaign.
- providing cooperative training for managers in businesses, government, hospitals, and schools.
- conducting workshops in quality and quality assessment.
- including quality information and the award examination in assistance programs.
- encouraging leading quality companies to apply for the National Quality Award and to share their experience with other organizations.
- giving awards at state and local levels to promote quality, and developing training courses for award assessors.

Evaluation organizations

Many groups perform inspections, audits, or other evaluations of organizations under their purview for purposes of accrediting, certification, rating, procurement, grants, or contracts. Some critics argue that the quality standards underlying many evaluation systems and approaches tend to be set too low, are too slow to improve, and might include features that actually deter quality improvement. Evaluation groups seeking to move toward higher, excellence-based standards of management might adapt the award examination to this use. Possible actions include:

- Promote the use of the award examination as a framework for communication and quality improvement among organizations evaluated.
- Develop standards, measurements, and benchmarks that best reflect excellence in the organizations evaluated.
- Develop case studies of organizations at differing levels of excellence.
- Train assessors in scoring and consensus development.
- Encourage organizations that are evaluated to receive training in assessment.

Business schools

Quality has become a key factor in business success in domestic and international markets. Many experts conclude that quality differences—real and perceived—are among the leading contributors to the U.S. trade deficit. Though views differ on the nature of the quality factor (partly because of disagreements over the meaning of quality), most analysts agree that quality-related market success stems from two major areas: production cost advantages and customer loyalty to brands they know to be, or perceive to be, of higher quality.

Leading U.S. companies, particularly those facing strong global competition and studying the successes of the competition, are moving forcefully toward systematic quality improvement efforts. The movement is slow because widespread gains require major re-orientation of operations, improved integration, and retraining of all employees, including managers.

Despite the growing importance of quality to business success, quality and quality management are receiving relatively little attention in business schools in either curricula or as an area for research. The award examination is well suited as an adjunct to curriculum development, because it provides an overview of total quality management. Potential uses of the award examination in business schools include:

> ***Education and training programs for specialists should include some instruction in quality management principles.***

- Provide a guide for revision of curricula and course materials such as textbooks.
- Serve as a framework for the development of case studies and for coherent analysis of quality as an element in business success.
- Serve as a device for defining total quality management in relation to other business management requirements.

By serving as a guide for these types of initiatives in the public and private sectors, the Baldrige Award will not only help recognize companies that achieve excellence, but will also encourage countless others on the long road to quality improvement.

Curt W. Reimann is associate director for quality programs at the Department of Commerce's National Institute of Standards and Technology (NIST). He is also the director of the Malcolm Baldrige National Quality Award Program. A member of ASQC, Reimann holds a PhD in chemistry from the University of Michigan.

UPDATE

1989 Malcolm Baldrige National Quality Award

This year, 40 companies applied for the award.

Manufacturing:	23
Small business:	11
Service:	6

Winners will be announced in mid-November.

For information about the award, contact:

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